GATEWAYS INTO THE FOOD STAMP PROGRAM

Aaron S. Yelowitz
University of Kentucky

The author is an Associate Professor at the University of Kentucky, a Research Associate at National Bureau of Economic Research, a Research Associate at Institute for Research on Poverty, and a Faculty Affiliate at the Joint Center for Poverty Research. He may be reached at: University of Kentucky, Department of Economics, 335 Business and Economics Building, Lexington, KY 40506-0034. He may also be reached by email at aaron@uky.edu, or by telephone at 859-257-7634. His web page is http://gatton.uky.edu/Faculty/yelowitz. All errors are the responsibility of the author. The data and copies of the "Stata SE" computer programs used in the preparation of this paper are available from the author.

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Abstract:

This study uses monthly data from the Survey of Income and Program Participation (SIPP) to explore several gateways into the food stamp program. I explore the effects of income variability, expanded Medicaid eligibility (from the Medicaid eligibility expansions and SCHIP program), and Medicaid outreach campaigns using panel data from the 1984-1996 SIPP panels. Most specifications show that Medicaid eligibility had strong effects on Medicaid participation, and part of this spilled over to food stamp participation; state outreach efforts raised overall food stamp participation, but were poorly targeted because they had smaller effects on Medicaid eligibles than ineligibles. Income volatility (measured by the standard deviation in household income) reduced food stamp participation.

JEL Classifications: I38, J22.

I. Introduction

The Food Stamp program is one of the most expensive welfare programs in the United States. More than 10 percent of the U.S. population participated during 1993, and expenditure amounted to $24.8 billion. After hovering around 19 to 20 million participants per year for most of the 1980s, the Food Stamp program grew dramatically in the late 1980s and early 1990s. Between 1987 and 1993, the number of participants shot up 41 percent, from 19.1 million to 27.0 million. As impressively, the caseload declined to 18.2 million by 1999 during the economic expansion. Although a host of reasons for the rise and fall in food stamp participation have been explored, this study will focus attention on some relatively unappreciated factors: the expansions in Medicaid eligibility, the outreach efforts associated with them, and income volatility (represented by the standard deviation in household income).

Medicaid, the most expensive means-tested program, has grown rapidly. The number of Medicaid beneficiaries rose from 23.1 to 33.4 million between 1987 and 1993, an increase of 45 percent. Even in the presence of a growing economy, the number of beneficiaries had increased to 39.9 million by 1999. Although the food stamp rules experienced only modest changes in the 1980s and 1990s (the period analyzed in this paper), the Medicaid rules experienced drastic changes. Specifically, Medicaid eligibility was greatly expanded for pregnant women, infants, and children starting in 1987. These expansions mainly offered Medicaid coverage to children in lower- to middle-income families who were ineligible for Medicaid coverage through Aid to Families with Dependent Children (AFDC). Health insurance was further expanded for families with the creation of the State Children's Health Insurance Program (SCHIP) from the Balanced Budget Act of 1997. The fraction of all children less than eighteen in the U.S. who were

covered by Medicaid rose from 15.2 percent in 1987 to 23.9 percent in 1993 (U.S. General Accounting Office, 1996). By 1998, approximately 20 percent of children were covered (Overview of Entitlement Programs, 2000).

This primary purpose of this paper is to document the link between Medicaid eligibility and food stamp participation. This study builds on the results of Yelowitz (1999) in several ways. First, this paper uses a more comprehensive, family-level measure of Medicaid. Instead of using a measure of Medicaid eligibility that only examines the youngest child's eligibility, the measure in this study incorporates all family members, and also incorporates expansions for pregnant women. Second, the paper uses a more comprehensive measure of Medicaid outreach efforts. The key problems in examining outreach efforts individually are three-fold: the number, intensity, and scope of policy instruments vary over time, are not always well documented in terms of their precise implementation, and are often implemented in tandem. These problems lead to a great deal of collinearity and measurement error in assessing the any given policy instrument. Instead, this study classifies states as "aggressive" if, at a given point in time, they offer more services than the median state. Although this method does not inform about the efficacy of any particular policy, it is similar to methods that have been used to evaluate TANF and welfare waivers, and it tells about broad changes in the outreach efforts. The third contribution is examining income volatility. The panel data used in this study allows computation of a household-specific measure of monthly income variability – the standard deviation in household income over time.

With these goals in mind, this study examines food stamp participation with panel data from the 1984 to 1996 Survey of Income and Program Participation, covering the years 1983 to

2000. Panel data methods are primarily used. Most of the results (regardless of the specification) point to several robust findings. Medicaid eligibility had strong effects on Medicaid participation (either with household random or fixed effects), and part of this "spilled over" to food stamp participation. State outreach efforts raised overall food stamp participation, but were poorly targeted because they had smaller effects on Medicaid eligibles than ineligibles. Finally, income volatility reduced food stamp participation (after controlling for income levels), which suggests that high transaction costs outweighed the low benefits when the food stamp participation duration was expected to be short.

The remainder of the paper is arranged as follows. Section II describes the Medicaid and food stamp programs. Section III describes the construction of the Medicaid eligibility. Section IV describes the SIPP extract. Section V illustrates some trends in the programs over time, constructed from the SIPP, along with trends in the policy variables used in this study. Section VI discusses the empirical set-up and several identification issues that potentially call for the use of instrumental variables. Section VII presents basic results on Medicaid eligibility and expanded results that incorporate outreach efforts. Section VIII concludes.

II. Background on Medicaid and Food Stamps

II.A. Medicaid

II.A.1. Eligibility Expansions in the Medicaid Program

In fiscal year 1993, more than $125 billion was spent on Medicaid, with the federal government paying 58 percent of the total, and the state governments paying the remainder. By 1999, approximately $190 billion was spent, with the federal government paying a similar

percentage. Medicaid offers public health care through free or subsidized medical services to several distinct groups. Before the expansions that started in the 1980s, the main way a poor family with children could qualify was by participating in the AFDC program. Medicaid serves female-headed households with children who participate in AFDC (and to smaller extent, the members of two-parent families in AFDC-Unemployed Parents). Approximately 30 percent of Medicaid expenditure was devoted to these younger groups in 1993, and 26.4 percent in 1999. Medicaid also served the blind, disabled, and elderly through a variety of "categorically needy", "medically needy", and optional programs. These groups represented the remainder of Medicaid expenditure.

Starting in 1984, and especially from 1986 onward, Congress attempted to increase access to health care for pregnant women, infants, and children through a series of Medicaid expansions. These expansions in eligibility were motivated by rising concerns over infant mortality and child health. Thus, Medicaid was targeted to all poor children and pregnant women, not just to recipients of cash welfare.

Several pieces of legislation expanded access to health care for children. In 1986 and 1987, federal legislation gave the states several options for expanding their Medicaid program. Legislation in 1988, 1989, and 1990 mandated more extensive coverage.[1]

The earliest legislation (effective April 1987) gave states the option to carry out the

[1] The Medicare Catastrophic Care Act of 1988 mandated coverage of pregnant women and infants to 100 percent of the federal poverty level (FPL). The Omnibus Budget Reconciliation Act of 1989 extended mandatory coverage of pregnant women and children under six to 133 percent of the FPL. The Omnibus Budget Reconciliation Act of 1990 mandated phased-in coverage of children aged six to eighteen to 100 percent of the FPL, and required states to provide outstationed enrollment at federally qualified health centers and disproportionate share hospitals.

expansions to children less than two. By January 1988, half the states had expanded eligibility. By the end of 1989, every state had adopted some form of expansion, although there was a great deal of across-state variation in Medicaid eligibility, which was based on the age of the child. The later mandates increased the income threshold to 133 percent of the federal poverty level (FPL) and the age limit to six. Thirty-two states were required to adjust their income threshold, and thirty-seven states were forced to increase their age limit. By January 1990, 44 states and Washington D.C. had expanded Medicaid by creating special income limits for pregnant women and infants. A total of 21 had raised their income thresholds above 100 percent of the FPL, and 15 raised it to 185 percent of poverty. Four states covered children to age 7, 10 states provided coverage to children to age 6, and 27 had age limits of 2 to 5.[2] Finally, the mandates expanded eligibility to children over the age of six to 100 percent of the FPL in 1991. By December 1991, all states extended Medicaid coverage to children up to age eight, though the income eligibility limits varied substantially.

In subsequent years, several states expanded coverage beyond the federal requirements with their own funding – mainly Washington, Vermont, and Minnesota. In 1992, a number of states started to use provisions of the Medicaid statute added by the Medicare Catastrophic Care Act of 1988, called the 1902(r)(2) option, which allowed states to use more liberal criteria than AFDC – by disregarding defined amounts of income and resources.[3] The handful of states that had expanded beyond the federal guidelines before 1992 now shifted the financing from state-

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[2] National Governors' Association, MCH Update, January 1990.

[3] The Medicaid Voluntary Contribution and Provider-Specific Tax Amendments of 1991 expanded the use of Section 1115 Research and Demonstration waivers to extend coverage to non-traditional Medicaid populations and expand managed care.

only programs to Medicaid. By December 1993, New York covered all children under age thirteen to 185 percent of the FPL, while Minnesota covered all children under age eighteen to 275 percent.

Around 1995, the Health Care Financing Administration allowed states, with approval, to adopt demonstration waivers that allowed for more flexibility in the provision of services and in eligibility. These Section1115 waivers were time-limited and subject to evaluation. Many states used this as a mechanism to move populations into managed care settings, expand eligibility, and modify benefit packages.

Although the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) made a number of sweeping changes to the welfare system, only a few of the provisions had dramatic effects on Medicaid. PRWORA replaced Aid to Families with Dependent Children (AFDC), an individual entitlement, with Temporary Aid to Needy Families (TANF), a block grant. It severed the automatic link between cash welfare assistance and Medicaid eligibility, but the Medicaid eligibility level that was in place before July 16, 1996 became the minimum limit. It also restricted access for many current legal immigrants and barred new legal immigrants from receiving Medicaid (and other means-tested programs) for five years.

The Balanced Budget Act of 1997 provided a greater opportunity for states to further expand health insurance coverage for children. The legislation created the State Children's Health Insurance Program (SCHIP) under Title XXI of the Social Security Act, effective October 1, 1997. Over the five years after SCHIP was enacted, $4 billion per year was available to states for this voluntary program. A state could expand Medicaid, develop a new program or expand

an existing program to provide health insurance to uninsured children, or implement a combination of the two approaches. The funds were targeted toward children below age nineteen living in families with incomes at or below 200 percent of the FPL. The Balanced Budget Act also allowed states the option of covering all children through age eighteen living in families with incomes below the FPL.

Tables 1 through 5 illustrate the effects of these expansions for children. The first table illustrates the effects for all children, while the next four break out the effects of the expansions by infants, young children (ages 1 to 5), older children (ages 6 to 11), and teenagers (12 to 17). The tables illustrate some of the program variation across the different states over time, by showing the Medicaid income eligibility limit expressed as a percentage of the FPL. Although the empirical analysis starts with data as early as 1983, this table starts with the beginning of the Medicaid expansions in 1987 (because the values would be zero for earlier years), and follows states through the year 2000. The tables average the statutory income limit over all months within a year and for all children within a given age bracket. Thus, an expansion in Medicaid to 100 percent of the poverty line in January would show up as "100" while an identical expansion in December would show up as $\frac{1}{12}$ of that level. Also, if the expansion only applied to some, but not all, of the children in the age bracket (this occurs most often in Tables 3, 4, and 5), then the number presented is an average of the expansion limit and "0," weighted by the number of children in each of the eligible/ineligible groups.

As Table 1 shows, the expansions were only implemented in a few states by 1987, and when averaged over all children, were quite small. By 1988, most states had expansions, and by 1989, all states did. The expansions became substantially more generous for children as a whole

between 1990 and 1992, as federal mandates were implemented. As can be seen, much of the overall variation in the income limit was reduced during this period, because the federal mandates for infants and young children were often binding on most states. Starting around 1993, however, more variation in income limits starts to appear, as states move beyond the federal mandates with their own funds and HCFA waivers. The income limits gradually rise in most states between 1993 and 1997, as a result of these state-options, as well as the gradual phase-in of earlier federal mandates to older children. Between 1997 and 1999, the SCHIP program was enacted, and it is clear that it had an immediate, dramatic effect on statutory Medicaid eligibility. The income limits rose substantially in virtually every state. Consistent with the funding goals of SCHIP, many states had income limits of 200 percent of the poverty line by 1999 (equivalent to annual household income of $33,400 in 1999 for a family of four). A great deal of the cross-state variation in the income limits was diminished by 1999, however. In the year 2000, the income limits in several states increased modestly, because of revisions to their SCHIP program and the phase-in of earlier federal mandates.

Tables 2 through 5 present somewhat different stories for infants, young children, older children, and teenagers. The expansions in 1987 though 1989 were quite important for infants (by bringing the Medicaid income limit up to 185 percent of the poverty line in some states), somewhat less important on children aged 1 through 5, and not at all important on children above age 6. The federal mandates in 1990 and 1991, on the other hand, had a more modest effect on infants (who were previously covered by state-optional expansions), a fairly dramatic impact on younger children, a modest effect on older children, and no real impact on teenagers. As shown in these age-specific tables, much of the cross-state variation by child's age was

diminished in these years. Over the next few years, from 1992 to 1997, the most dramatic increases in the income limit occurred for older children, and to a lesser extent, teenagers. The limits for older children (in Table 4) increased substantially as federal mandates phased in Medicaid coverage for children born after September 30, 1983, and children of all ages were affected by several generous, state-financed, Medicaid expansions. Obviously, these expansions affected older children and teenagers more, because infants and younger children were already covered by previous expansions. The expansions from 1998 onward, due to SCHIP, had the most dramatic effect on teenagers, as shown in Table 5.

These reforms resulted in a dramatic increase in Medicaid eligibility and coverage. Administrative data show a sharp rise in the number of children covered by the Medicaid expansions (beneficiaries without cash assistance) starting in 1988, whereas the number of children enrolled in other parts of the Medicaid program remained quite stable. In 1991, three million children were covered by Medicaid as a result of the expansions (U.S. House of Representatives, 1993).

The studies by Currie and Gruber (1996a,1996b) and Cutler and Gruber (1996) all find that the expansions in Medicaid eligibility translated into increases in Medicaid coverage. Currie and Gruber (1996b) report that eligibility for Medicaid increased by 100 percent between 1984 and 1992. By the end of 1992, one-third of the children in the U.S. were eligible for Medicaid. Consistent with the administrative data, their findings show that Medicaid coverage from the expansions was flat until 1988, and rose steeply after that. These patterns offer some promise for finding spillovers to the Food Stamp program. It seems reasonable that newly eligible households may not have had much contact with the welfare system before the

expansions of Medicaid.

II.A.2. Medicaid Outreach Efforts

In addition to changes in income eligibility, states implemented a number of other changes to streamline the application process and better inform families about their eligibility. Over the course of the 1990s, some of these efforts that were first state-optional became federally-mandated.

The eight main efforts to streamline the application process were offering continuous eligibility, presumptive eligibility, and expedited eligibility, dropping the asset test, shortening the application form, allowing mail-in applications, and referring newborns to welfare agencies for Medicaid eligibility.

The Omnibus Reconciliation Act of 1986 (OBRA 1986) allowed states to offer continuous eligibility, which gives Medicaid coverage to pregnant women for sixty days after the delivery, and to infants through the first year of life. OBRA 1990 made continuous eligibility mandatory starting in January 1991. OBRA 1986 also allowed presumptive eligibility, which grants temporary Medicaid eligibility while the formal application is being reviewed. Expedited eligibility is a process of giving prenatal care applications priority in the determination process, with determinations usually done within ten or fourteen days. Some states view expedited eligibility as a substitute for presumptive eligibility. OBRA 1986 allowed states to waive asset tests, by not reviewing an applicant's assets when determining Medicaid eligibility. Some states also shortened the application form. In some cases this was a result of not reviewing assets any more, which reduces the complexity of eligibility determination. The new forms were often in

range of one to nine pages. Some researchers have identified complex application forms as one of the major problems contributing to low enrollment rates.[4] Some states allowed Medicaid applications to be mailed in and did not require a face-to-face interview for eligibility determination. Starting around 1991, some states offered a "newborn referral form." When a Medicaid-eligible woman delivers her baby, a form is completed at the hospital and sent to the local eligibility office (or directly to the state). The infant is then assigned his own eligibility number that is valid for one year.

The nine main efforts to better inform families about their eligibility were outstationing welfare caseworkers in hospitals, making available applications at multiple sites, allowing submission of applications at multiple sites, constructing combination forms for multiple programs such as Medicaid and WIC, developing culturally appropriate materials explaining Medicaid, publicizing Medicaid through television, radio and print ads, offering a toll-free hotline for families to get additional information, involving schools in the initiatives, and involving employers in the initiatives.

Unfortunately, not all of these initiatives are documented over time. Even though some of the policy measures were implemented in the 1980s, the main source that collects this information does not start until 1990. Since 1990, the Health Policy Studies Division of the National Governors' Association (NGA) Center for Best Practices has conducted a national survey of state Medicaid coverage of pregnant women and children. The NGA claims that this has served as the definitive report documenting changes in Medicaid eligibility to pregnant women, infants, and children across the nation. In the analysis, then, I only examine changes in

[4] Hill and Breyel, Caring for Kids, 1991.

outreach efforts from 1990 onward.

The outreach efforts with the most complete information over time and across states in the NGA publications relate to continuous eligibility, presumptive eligibility, expedited eligibility, dropping the asset test, shortening the form, allowing mail-in applications, referring newborns to welfare agencies, and outstationing caseworkers. Far less systematic information is given about the other services. Moreover, the information is more complete between 1990 and 1996.

Continuous eligibility was widespread among the states and there was not much variation over time. In January 1990, 41 states had elected this provision, and it increased to 43 states by July 1990. By January 1991, all states were mandated to offer continuous eligibility. Thus, fluctuations in family income did not affect an infant's eligibility after that date.

Presumptive eligibility was a moderately popular option. In January 1990, 25 states chose this option. Between 1990 and 1997, the number of states varied slightly, between 25 and 30, with some states adopting it and others dropping it.

The expedited eligibility provision exhibited substantial growth over time. In January 1990, only 9 states offered this provision. It grew slowly until January 1993, when 13 states had adopted it. By July 1993, however, 24 states had expedited eligibility, and the number grew to 29 by July 1997.

Dropping the asset test was a fairly popular option in the early to mid 1990s. In January 1990, 44 states had dropped it. The number of states that adopted this provision continued to grow to 48 states, but starting in 1993, several states rolled back this provision. By July 1997, 45 states had dropped the test, and by October 1997, only 31 still had this provision.

Shortening application forms grew dramatically over the 1990s. In January 1990, only 19 states had a short form. By 1992, 33 states had adopted such a form. From 1993 onward, approximately 42 states had a short form.

The first systematic collection of whether states offered mail-in applications does not appear in NGA documents until July 1991. At that time, 14 states allowed them. The number of states that offer this service varied quite a bit over the next few years, but by 1996, had reached 30 states, and by 1997 had reached 35 states.

The first systematic collection of newborn referral forms did not begin until January 1992, when 14 states had it. In the next six months, many states adopted it, so that 26 had it by July 1992. Over the next five years, approximately 28 to 30 states had newborn referral forms.

Only 17 states outstationed caseworkers at sites where women receive prenatal care in January 1990. Hospitals were the most common site where caseworkers were posted. In addition, some caseworkers were placed at local health departments, prenatal care clinics, and Community and Migrant Health Centers. By July 1991, only 24 states had outstationed workers, when the OBRA 1990 mandate went into effect. From then on, states were required outstation caseworkers at federally qualified health centers and hospitals that served a disproportionate share of Medicaid and indigent patients.

The remaining efforts, that largely relate to publicity campaigns, were documented only sporadically in the NGA publications. Thus, it is not possible to get meaningful trends over time for those services.

To summarize, unlike the income expansions, the outreach efforts are not as well documented. The precise timing of the outreach efforts is often difficult to determine since the

NGA publications give a "snapshot," usually in January and July of a given year. Moreover, these efforts are not uniformly documented in all editions. Altogether, 17 types of outreach were documented in total (though no more than twelve were ever presented at the same time). In addition, many of the outreach efforts were implemented in tandem.

As a consequence of these difficulties, this study classifies states into "aggressive" and "non-aggressive," rather than attempting to interpret any single outreach effort. To do this, states are divided by whether they offered more services than the median state (as documented by the NGA) at a given point in time. The number of services, of course, will vary over time because the NGA documents more services in some publications and less in others. For lack of better information, this study assumes the state's measured aggressiveness does not change between NGA publications.

Table 6 shows Medicaid outreach efforts over time. Between 1990 and 1998, anywhere from 6 to 12 outreach efforts were documented. In some years, such as 1991, most states had a quantity of services close to the median, and in other years, like 1998, there was much more dispersion. By comparing a state's services to the median (shown in the second row of Table 6), there appears to be substantial variation over time in a state's status as "aggressive" or "non-aggressive." Overall, approximately one-third of the states offer services above the median.

II.B. The Food Stamp Program

In contrast to Medicaid, where eligibility has changed dramatically, food stamp benefits are available to nearly all low-income households meeting uniform, national eligibility limits for income and assets. The government has taken an extremely active role in expanding Medicaid,

but with one major exception, it has left the Food Stamp program essentially unchanged.

Four features about the Food Stamp program are noteworthy. First, the income eligibility limit is 130 percent of the FPL, and no cross-sectional variation in this limit exists (except Alaska and Hawaii). In addition, the income limit is indexed to the Consumer Price Index and updated every October. Second, no explicit family structure requirements exist. Both single and married households can qualify, and also households with or without children. Benefits and eligibility are connected to a family's size, however. Third, no direct link to Medicaid exists. An indirect link exists through the AFDC program, however. Since 1985, an AFDC recipient automatically qualifies for both food stamps and Medicaid. Under TANF, however, Medicaid eligibility is not automatic, although food stamp eligibility is. In addition, for those off AFDC/TANF, the application costs are higher because eligibility is not automatic. Fourth, income net of deductions is taxed at 30 percent under the food stamp program. This implies that the actual food stamp benefit will become small as income approaches 130 percent of the FPL.

The one major change in the Food Stamp program is associated with PRWORA 1996 legislation. The welfare reform legislation limited food stamp eligibility for able-bodied adults between 18 and 50 without dependents. Eligibility is limited to three to six months in any thirty-six month period unless they are working at least half time or in a work or training activity. Since the sample analyzed in this paper includes only households with dependents, this requirement should not affect the results. PRWORA also made some changes that affected immigrants, but these changes should not affect the conclusions for this study.

II.C. Prior Work Linking Medicaid and Food Stamps

Although several reports document changes in food stamp eligibility and takeup over time, few studies directly examine the link between food stamps and Medicaid. Both Corson and McConnell (1990) and McConnell (1991) explore this, and their findings suggest that Medicaid is important. In their state-level analysis, Corson and McConnell (1990) found that an increase of 100 Medicaid recipients generated an increase of 19 to 30 food stamp participants. McConnell (1991) finds that as much as one-quarter of the increase in food stamp participation was due to Medicaid changes, with the largest impacts in Western and North-Central states and in Texas and Florida.

These studies have several limitations, however. First, they extend only until 1990, but the most dramatic Medicaid expansions were enacted after that date. Eligibility was extended to children under age six to 133 percent of the FPL in 1990, and to all children born after September 1983 to 100 percent of the FPL in 1991. Second, the focus of these studies is on Medicaid participation, not eligibility. Third, these studies use state-level aggregate data.

In Yelowitz (1999), I tried to address these limitations. My study used data that extended to the calendar year 1993. This incorporated the federal mandates for Medicaid in the early 1990s, but it did not incorporate the Section 1115 waivers, the 1902(r)(2) law, or the SCHIP program, which were phased in later. The current study goes through February 2000 and includes these changes to Medicaid. In Yelowitz (1999), I focused on Medicaid eligibility rather than Medicaid recipiency as the key independent variable. Since the government can more easily expand (or contract) Medicaid eligibility than Medicaid recipiency, the policy implications of this analysis are straightforward. In this study, I use an improved measure which analyzes Medicaid eligibility for the entire family, rather than simply using eligibility for the

youngest child. Thus, the current measure has more variation in it allowing for more precise estimation of Medicaid's effects. In Yelowitz (1999), I computed Medicaid eligibility using household level data rather than state level aggregate data, and do that here as well. Focusing on aggregate data masks much of the variation in the Medicaid law. The expansions affect families with children of different ages differently. By using household level data, I can exploit these "treatment" and "control" groups. Finally, I explore the impacts of outreach efforts, using data from 1990 onward.

III. Construction of Medicaid Eligibility

There are many studies that have examined different impacts of the Medicaid expansions, and these studies have used largely divergent measures. Measuring the impact of Medicaid policy changes is somewhat more challenging than other polices (such as the Earned Income Tax Credit or pre-TANF welfare waivers), because the expansions were phased in over time and to different income limits for children of different ages. To illustrate the incentives at the family level, consider a fairly typical situation from the early 1990s given in Table 7. It was often the case for most of the 1980s and 1990s that Medicaid would give far less generous treatment to older children than to younger children and/or pregnant women. Obviously, the income limit from the Medicaid expansions is quite clear for a given child or pregnant woman. It is far less clear, however, how to aggregate this up to the family level.

Previous work has dealt with the issue of individual versus family level incentives in a number of ways. One approach is to ignore the issue of family level incentives. In Yelowitz (1995), I examined the impact of Medicaid on AFDC and labor force participation, and

parameterized the Medicaid expansions based on the incentives that would be faced by losing Medicaid for the youngest child in the family; since health care expenses are higher for younger children, intuition would suggest that the changes in Medicaid for these children would be most important. There are two problems with this parameterization. First, the Medicaid expansions only covered children and pregnant women, but not adults, and losing health insurance for adults could affect the work-welfare decision. Second, for families with more than one child, the budget constraint likely has more than one "Medicaid notch." For example, as Table 7 illustrates, a family in 1990 with an infant and a five-year-old faces the loss of Medicaid for the older child at 100 percent of the FPL and at 150 percent for the younger one. Modeling the incentives based on the youngest child misses the disincentives associated with the loss of coverage for the five-year-old. A final issue relates to the cross-sectional data that was used. The analysis used repeated cross sections from the March Current Population Survey (CPS), which makes it difficult to model eligibility for pregnant women and makes it difficult to exploit the precise phase-in of the Medicaid law.

Cutler and Gruber (1996) examine crowd-out of Medicaid health insurance using the March CPS. In their study, they examine an individual decision – whether the child or adult woman has Medicaid coverage, as well as a family-level decision – whether the same person has private health insurance. Modeling the problem is more straightforward for individual Medicaid take-up, since it is clear what income limit to use for each child. This approach still suffers from many of the same problems about family decision making, however. In deciding whether to purchase individual or family health insurance policies (or none at all), the family-level decision likely involves the consequences from covering all family members. In most of their analysis on

crowd-out, Cutler and Gruber use an individual level measure of Medicaid eligibility. In their analysis of the mechanisms through which crowd-out occurs, however, they construct a variable called "% HIU dollars" which captures the fraction of health insurance dollars that are covered by Medicaid for a family. Since Cutler and Gruber use the CPS, some of the within-year variation in the Medicaid expansions is missed, and the modeling of Medicaid eligibility for pregnant women is problematic.

In later work, Yelowitz (1998), which focused on marriage behavior, I tried to model the family-level more explicitly, by using a measure of eligibility based on the youngest child, and another based on the oldest child. The measured based on the youngest child corresponds to "any children being eligible," while the measure based on the oldest corresponds to "all children being eligible." These measures were based solely on the state rules, time period, and child's age, and implicitly assumed the family had zero income. Since the analysis used cross-sectional data from the CPS, the incentives facing pregnant woman were not modeled.

In Gruber and Yelowitz (1999), we analyzed savings and consumption behavior, and constructed a measure of "Medicaid eligible dollars" which in many respects is similar to the approach taken in this study. For each family member, we computed whether they were eligible for Medicaid under a number of different regimes (the Medicaid expansions, the Medically Needy program, AFDC, etc.). We then attached to each person the average annual health expenditure (given their age and gender) calculated the 1987 National Medical Expenditure Survey. We then computed "Eligible Medicaid dollars" from:

$$(1) \qquad \sum_j MCELIG_{ij} EXPEND_{ij}$$

where $MCELIG_{ij}$ is a dummy variable indicating whether the i^{th} member of family j was eligible for Medicaid, and $EXPEND_{ij}$ is the average health expenditure from the NMES. Because there are a number of endogeneity and measurement error issues associated with the measure in equation (1), we constructed an instrumental variable for covered health care spending based on the methods of Cutler and Gruber (1996). This simulated measure was represented by:

$$(2) \qquad \sum_{j} SIMELIG_{i,ed,j,t} EXPEND_{ij}$$

where $SIMELIG_{i,ed,j,t}$ represents the fraction of children (or adults) eligible for Medicaid based on state of residence, time period, and educational attainment. The measure in equation (1) goes further in capturing the family-specific variation, but does a poor job of capturing the effects on those who were not covered. For example, a twenty-year-old full-time student would be covered under most private health insurance plans, but not under Medicaid. We controlled for family structure in some detail in the empirical analysis, but the measure itself does not capture the fact that some family members are not covered. Moreover, the pregnancy expansions were modeled by assuming a constant cost of pregnancy (computed as $3,996 in the NMES), and imputing age-specific fertility rates to women aged 15 to 44. Thus, whether a woman was actually pregnant or not was not incorporated in the analysis.

In this study, I construct a family specific measure that captures many of the salient features of the Medicaid expansions. A measure of Medicaid should capture the following features:

1. The Medicaid expansions offered different generosity within a family because the income limits depend on the ages of the children and whether the woman is pregnant.

2. Some members in a family (such as adult men or older children) may not be covered by the Medicaid expansions, and for these families, the expansions should be less valuable.

3. Covering young children is more valuable than covering older children, because younger children tend to have higher health care expenses.

4. The value of the pregnancy expansions varies depending on whether a woman is actually pregnant; in addition, the benefits are most concentrated around the time of the delivery since that is when the actual health care costs are the greatest.

In order to capture these features, the measure I construct is a "replacement rate" (denoted as RR_j) from the Medicaid expansions. In this case, the measure represents: *What fraction of expected health care expenses for the family will be covered by Medicaid?* The measure is similar in many respects to the one in Cutler and Gruber (1996), except that it makes a distinction between women who are actually pregnant and those who are not. It is represented by:

$$(3) \qquad RR_j = \frac{\sum_j \left(MCELIG_{ij} EXPEND_{ij} + PREGELIG_{ij} PREGEXPEND_{ij} \right)}{\sum_j \left(EXPEND_{ij} + PREGEXPEND_{ij} \right)}$$

where $PREGELIG_{ij}$ and $PREGEXPEND_{ij}$ are measures of a woman's Medicaid eligibility during the pregnancy and the pregnancy expenses (which vary during the pregnancy). Both measures equal zero for everyone except pregnant women. It proved impossible to find out how health expenses varied during the pregnancy and delivery, so as a first pass, I assume that two-thirds of

pregnancy costs are related to the delivery itself, and the remaining one-third is distributed evenly over the nine months prior to delivery. Since pregnancy is measured separately, the $EXPEND_{ij}$ represents net-of-pregnancy expenditure.

This measure improves in several ways on those in prior work. It obviously varies between zero and one, and gives greater weight to covering more family members as well as more expensive family members (such as pregnant women and infants). It captures the variation in the income limits across age since $MCELIG_{ij}$ is computed using actual household income. As in Gruber and Yelowitz (1999), however, the use of actual household income is potentially problematic, so in some specifications this replacement rate will be instrumented using a "simulated" replacement rate. This instrument is represented by:

$$(4) \qquad SIMRR_j = \frac{\sum_j \left(SIMMCELIG_{ij} EXPEND_{ij} + SIMPREGELIG_{ij} PREGEXPEND_{ij} \right)}{\sum_j \left(EXPEND_{ij} + PREGEXPEND_{ij} \right)}$$

where all of the variables are defined as before, and $SIMMCELIG_{ij}$ and $SIMPREGELIG_{ij}$ compute Medicaid expansion eligibility assuming the household has zero income. That is, if a Medicaid expansion had been implemented for a child of a given age or a pregnant woman, then these variable would be equal to one.

IV. The SIPP Data Set

The Survey of Income and Program Participation (SIPP) can shed light on these issues. The SIPP is a longitudinal survey that collects information on topics such as income,

participation in government transfer programs, employment, health insurance coverage, and general demographic characteristics. It samples the U.S. civilian noninstitutionalized population, and is nationally representative.

The SIPP content is built around a "core" of labor force, program participation, and income questions designed to measure the economic situation of persons in the United States. It interviews households every four months, asks retrospective questions on a monthly basis, and follows households for up to 48 months. A new cohort is introduced each year, forming a new "panel." In this study, the 1984-1988, 1990-1993, and 1996 SIPP panels are used.[5]

The initial survey design called for the introduction of a new panel every year; each panel was planned to cover 32 months. In practice, a number of panels have been shorter. One result of the initial design was that multiple SIPP panels were in the field simultaneously. A redesign introduced with the 1996 Panel abandoned the overlapping panel structure and extended the length.

The first sample, the 1984 Panel, began interviews in October 1983. The 1985 Panel began in February 1985. Subsequent panels began in February of each calendar year, resulting in concurrent administration of the survey in multiple panels. The actual panel duration has varied over time due to funding limitations. The original goal was to have panels covering eight waves. In several instances, panels were terminated after seven waves. Two panels were terminated even earlier: 1988 (six waves) and 1989 (three waves). The 1984 panel consisted of approximately 20,900 eligible households. The next four cohorts were considerably smaller.

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[5] There were no SIPP panels in 1994 or 1995, in anticipation of a redesigned 1996 SIPP panel.

The 1985 panel consisted of 14,300 households. The 1986 panel consisted of 12,400 households. The 1987 panel was similar in size to the 1986 panel. The 1988 panel had 12,700 households. The 1989 panel, which was cancelled after twelve months, was not used in the analysis.

The panels from 1990 onward were redesigned and larger than most of the preceding ones. The 1990 panel consists of approximately 23,000 households who were interviewed eight times between February 1990 and September 1992. The 1991 panel consists of 15,000 households who were interviewed eight times between February 1991 and September 1993. The 1992 panel consists of 21,000 households who were interviewed nine times between February 1992 and January 1995. The 1993 panel consists of 21,000 households who were interviewed nine times between February 1993 and January 1996. The 1996 panel was longer and larger than any of the previous panels. It consisted of 40,000 households who were interviewed twelve times between April 1996 and March 2000.

The data set was constructed as follows. From the "core" interviews, I obtained monthly information on family structure, demographics, household income, welfare program participation and geographic identifiers from all available waves of the 1984 to 1996 panels. Each observation in the SIPP prior to 1990 is arranged in a "person-four month" format, while each observation from 1990 onward is arranged in a "person-month" format. Thus, each person appears as many as four times in a given wave of the SIPP after 1990. For the 1984 to 1988 panels, I converted the data into "person-month" format. The 1984 panel consists of 1,687,588 "person-months," the 1985 panel, 1,036,212 "person-months," the 1986 panel, 830,964 "person-months," the 1987 panel 868,212, "person-months," and the 1988 panel, 759,240 "person-

months."

The 1990 SIPP has a total of 1,769,133 "person-months" on 69,101 individuals. The 1991 SIPP has 1,133,515 "person-months" on 44,143 individuals. The 1992 SIPP has 1,748,849 "person-months" on 61,534 individuals. The 1993 SIPP has 1,750,970 "person-months" on 62,346 individuals . The 1996 SIPP has 3,897,232 "person-months" on 116,004 individuals.

From the SIPP data, a number of screens are applied. First, I exclude observations where the SIPP does not uniquely identify the state because I must impute Medicaid eligibility based on state rules – this excludes nine states from the analysis (though the exact states vary over time).[6] These states are usually sparsely populated, so not that many observations are lost. Second, I include only households that have one family. Although the definition of a "food stamp unit" potentially could include multiple families, there is no way to figure that out in the microdata.[7] Thus, I restrict the sample to one family households. Third, I exclude a small number of observations in early SIPP panels that are missing an "address identifier," which is needed in linking a household over time. Some households in earlier SIPP panels were also missing the household's poverty level, so they too are excluded. Fourth, I include families with at least one child under the age of eighteen present, and exclude families with any elderly members. I do not include childless households, because they are a far less satisfactory "control group" for the Medicaid expansions than families with ineligible children. I exclude families with elderly members (over the age of 65) because almost all elderly are covered by Medicare, which would

[6] The missing states are: Alaska, Idaho, Iowa, Maine, Montana, North Dakota, South Dakota, Vermont, and Wyoming.

[7] Generally speaking, individuals living together constitute a single food stamp household if they customarily purchase food and prepare meals in common.

complicate the analysis of computing the appropriate "replacement rate." Finally, I only include observations from the fourth interview month. The sample that included all months resulted in nearly 100,000 households with more than two million observations. I lacked the computing power to estimate some of the models on this sample, so I restricted the sample to the final month within a given wave of the SIPP.

In computing the Medicaid replacement rate, discussed in Section III, it is important to impute Medicaid eligibility correctly for children and pregnant women. The key variables that are needed for this are total household income, state of residence, month, year, and either the age of the child or whether the woman was pregnant. The first four variables - income, state, month, and year, are easy to measure in the SIPP.[8]

Although it would appear easy to measure the age (and birthday) of a child to impute the Medicaid expansions, in reality, there are some important difficulties. To illustrate, of the 69,101 individuals in the 1990 SIPP, around one-third (21,725 individuals) do not report consistent information on birth month and birth year across all months they were in the SIPP. That is, in at least one interview, the birth month or birth year disagrees with the other interviews. Since many adults (who report this information for themselves) have inconsistencies in their birthday, this is not simply a problem of another household member estimating the child's age. Since there were such a large number of inconsistencies, and because this would create a great deal of unfounded variation in the Medicaid replacement rate, I used the modal

[8] Household total income will be identical to family total income since there is only one family in the household. This variable includes earnings, property income, means-tested cash transfers, and "other" income.

birthday response for each individual.[9] The inconsistencies on birthday are particularly important for the SIPP panels prior to 1996.

The SIPP does not ask about pregnancy, so the only way to figure out whether a woman was pregnant is by the presence of an infant in the household.[10] As with children, I imputed the modal birthday response for infants and call that the "delivery date," and then impute the nine months before the delivery date as the pregnancy.[11]

The above variables are used to determined Medicaid eligibility. To determine the fraction of health insurance costs that are covered, I turn to the appendix in Cutler and Gruber (1996), which gives average health expenses by age for males and females. The health care costs are highest for infants, fall until age ten, then rise during the teenage years. Health care costs rise as adults get older, and are higher for women than for men until age 60.

The other policy variables used in the analysis are fairly straightforward. The "Medicaid outreach" variable is a 0-1 variable for whether the state is above the median in terms of the number of services it offers in a given period. The standard deviation of income is computed for all months that a household is observed in the SIPP (and was created from all interview months, not just the fourth month). Within a household, this variable is constant.[12]

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[9] Many respondents had only one or two months that were inconsistent from all other months, so take the modal response probably gets at the true birthday. If the respondent had more than one modal birthday, I used the earliest one.

[10] This method obviously misses abortions, miscarriages, adoptions, and infant mortality.

[11] Yelowitz (2002) extensively explores the issue of assigning pregnancies in the SIPP.

[12] The standard deviation, as it currently stands, is computed using total household income measured in nominal dollars. I plan to convert this into real dollars, measured at the end of the period (February 2000), with monthly price indices, obtained from the Bureau of Labor

Table 8 presents summary statistics for the entire SIPP sample from 1983-2000 (which includes 497,786 observations on 95,833 households), and the sample restricted to 1990 onward (which includes 333,302 observations on 58,493 households. The unit of observation is a household in a given month. Overall, among families with children, household food stamp participation was greater than 10 percent. Medicaid participation was somewhat higher, and increased in the later period. From 1990 onward, 15 percent of households had at least one person participate in Medicaid. Household income averaged $3,439 per month over the period, and the standard deviation within the household was $1,073. Thus, there was considerable income volatility. 37 percent of households lived in "aggressive" outreach states. The "replacement rate" based on actual Medicaid eligibility averaged 4.8 percent over the entire period, and 7 percent in the 1990s as the expansions became more generous. The "replacement rate" instrument (which is not a function of household income and will be discussed later), was about three times higher in each period.

The remaining variables in the table are also included in the estimation. These include the demographics of the head of household and spouse (include age, education, race, ethnicity, gender, marital status, and veteran status), as well as detailed controls for household composition. Note that in this table, the spouse's variables are set equal to zero for heads that do not have a spouse. The household composition variables include the number of males and females that fall into different age categories, and were used in constructing the replacement rate. By including these household variables, the variation in the Medicaid replacement rate

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Statistics (http://www.bls.gov/cpi/home.htm). I will use the CPI for all urban consumers, series "CUUR0000SA0."

does not come from household composition *per se*, but rather the interaction of household composition with the Medicaid rules. Although not shown, the analysis also includes dummy variables for whether anyone in the household was pregnant or delivered a baby in a given month.

V. Trends in Medicaid Policy and Program Participation

Figure 1 shows the trends over time for the outcomes of interest, as well as for Medicaid eligibility. The figure includes all of the observations from the SIPP (with the screens discussed in the previous section), not just the observations from the fourth month. Household food stamp participation (represented by the blue line) gradually increased from 1985 to 1993 among families with children in the SIPP, from 8.2 percent to 11.9 percent, a rise nearly 50 percent. Between 1993 and 1996, food stamp participation averaged 11 to 12 percent. After 1996, food stamp participation plummeted. It fell from a high of 12.2 percent in 1996 to 7.1 percent in 2000.[13] Medicaid participation (represented by the red line) rose dramatically from 1988 onward, after remaining in the range of 8 to 8.7 percent for most of the earlier 1980s. Between 1988 and 1996, Medicaid participation more than doubled, from 8.6 percent to 18.5 percent. As with food stamps, Medicaid participation fell after 1996, but not nearly so dramatically. By the year 2000, 15 percent of the households participated in Medicaid.

The key policy variable, the Medicaid replacement rate (represented by the green line),

[13] Note that Figure 1 refers to participation rates, not takeup rates. The denominator is all households in the SIPP, not all eligible households. For evidence on trends in takeup rates, see the work of Trippe (1994, 1995, 1996), Trippe and Doyle (1992), Trippe, Doyle and Asher (1992), Trippe and Sykes (1993), and Cody and Trippe (1997). Trippe and Sykes (1993) report that 69 percent of eligible households participated in food stamps in January 1992.

rose steadily after 1987, and increased in predictable ways with the implementation of the SCHIP program. In 1987, less than one percent of household expenses were covered by the Medicaid expansions, on average. By 1989, before federal mandates went into effect, less than 2 percent of expenses were covered (because Medicaid was mainly targeted to very young children at that time). Over the next seven years, the fraction of spending covered by the Medicaid expansions rose to 8.1 percent in 1996. With the phase-in of the SCHIP, the replacement rate rose to more than 11.7 percent by the year 2000. The Medicaid replacement rate instrument, represented by the black line, applies the Medicaid rules but assumes zero income for the household (since actual income could be endogenous). To some extent it how the Medicaid expansions affected the poorest households. It rose dramatically during the period, but even by the end, only about one-third of household health care expenses were covered, on average.

VI. Empirical Framework

This section provides a framework for empirically identifying Medicaid effect. The reforms in the Medicaid program create "treatment" and "control" groups by providing variation in Medicaid eligibility along three arguably exogenous dimensions for a given individual. The reforms create variation within a state at a given point in time, because they condition eligibility on the age of the child or on pregnancy. In addition, they create variation in eligibility across states and over time, since the earlier legislation was state-optional and the states adopted the expansions at different rates.

On the one hand, there are plausible stories why the state, time, or child's age dimension alone could result in omitted variables bias when estimating the effect of Medicaid eligibility.

For example, attitudes toward welfare participation could vary across states in ways that are difficult to quantify. Childcare expenses certainly vary by the age of the youngest child. On the other hand, after accounting for these "main effects," it is more difficult to construct an omitted variables story that relies on the interaction of these dimensions.

To address the concerns about omitted variables bias mentioned above, I include a full set of dummy variables for state, time, age structure, and pregnancy status in the regression. The models take the form:

$$(5) \qquad FSP_{jt} = \beta_0 + \beta_1 RR_{jt} + \beta_2 X_{jt} + \beta_3 DEMOG_{jt} + \beta_4 PREG_{jt} + \sum_s \delta_{1s} D_s + \sum_t \delta_{1t} D_t + \varepsilon_{1jt}$$

$$(6) \qquad MC_{jt} = \gamma_0 + \gamma_1 RR_{jt} + \gamma_2 X_{jt} + \gamma_3 DEMOG_{jt} + \gamma_4 PREG_{jt} + \sum_s \delta_{2s} D_s + \sum_t \delta_{2t} D_t + \varepsilon_{2jt}$$

where FSP_{jt} and MC_{jt} are dummy variables for food stamp participation and Medicaid participation, RR_{jt} is the Medicaid replacement rate based on actual eligibility from equation (3), X_{jt} is a vector of household and individual characteristics that may affect food stamp and Medicaid participation, $DEMOG_{jt}$ is a set of variables indicating the age/gender distribution in the household, $PREG_{jt}$ is a dummy variable indicating whether a woman in the household is pregnant (and another variable represents whether the baby was delivered that month), D_s is a set of dummy variables indicating the state of residence, and D_t is a set of dummy variables for calendar year.

The coefficients $ and (will be estimated, and , is the error term. The models will be estimated with different assumptions about the error term. The first model uses the Huber/White/sandwich estimator of variance and specifies that the observations are independent

across groups but not necessarily independent within groups. The second will estimate a model with the GLS random-effects estimator. The third will estimate a model with household fixed effects.

As Cutler and Gruber (1996) note, there are a number of endogeneity issues in estimating models of this sort. First, there may be omitted variables bias. The replacement rate, food stamp, and Medicaid participation are functions of family structure and income. The models do control linearly for detailed age/gender cells within the family, and they include a number of controls for income. It is possible, however, for these variables to enter in a nonlinear fashion, or potentially interact with each other. Second, there may endogeneity issues. If the food stamp program has labor supply disincentives, then Medicaid eligibility (and therefore the replacement rate) could be affected by food stamp participation. Third, there may be measurement error. For example, household income or a child's age could be misreported.

A solution to all of these problems is to use an instrumental variables strategy. In similar spirit to the methods of Cutler and Gruber (1996), I construct a replacement rate that is not a household's particular economic circumstances (by not using the household's income), but rather a variable that is solely a function of the state rules, time period, and family structure. Unlike Cutler and Gruber (1996), who estimate the fraction eligible for Medicaid with a national sample and state rules, I instead assume the family has zero income in constructing my instrument. This variable, $SIMRR_{jt}$, is given in equation (4). Since $SIMRR_{jt}$ is not a function of income, it is likely that the omitted variables bias, endogeneity, and measurement error issues will be solved with its use.

VII. Results

VII.A. Is Medicaid eligibility a gateway into the food stamp program?

Tables 9 and 10 present the basic results for food stamp participation and Medicaid participation. These tables present results using the full SIPP data – nearly 500,000 observations on nearly 100,000 households. The first three columns of each table estimate the models without any correction for the potential omitted variables bias or endogeneity issues associated with RR_{jt}. As seen by the different columns, the magnitude of Medicaid varies substantially with the estimation method that is use. Regardless of the estimation method used, however, Medicaid eligibility has statistically significant effects on food stamp participation. To put some perspective on the numbers, recall that the average replacement rate rose from zero prior to 1987 to 11.7 percent by the year 2000. In the first three columns, a change in the replacement rate of this magnitude would increase food stamp participation anywhere between 1.03 to 4.44 percentage points (from a mean food stamp participation rate of slightly over 10 percent). Obviously some of these estimates are very large, though the effects are much smaller when estimating either the household random effects or household fixed effects models. Turning to Table 10, the effects of the Medicaid replacement rate on Medicaid participation are approximately one-third larger than the effects on food stamp participation. This is to be expected – only some of the newly-covered Medicaid households would also enter the food stamp program. The relative magnitudes, however, would suggest that a high fraction who enter Medicaid also enter food stamps.

There are some clear problems with columns (1)-(3) in both tables, however. It is possible that even though a quartic in income is included, as well as the standard deviation, these

controls may not be adequate. Income clearly affects both Medicaid eligibility (and hence, the replacement rate) and food stamp/Medicaid participation. Columns (4)-(6) in each table reestimates the models using an instrumental variables strategy, where the instrument is not a function of household income. The results in Table 9 for food stamp participation suggest that the controls for income were not adequate in columns (1)-(3). The contrast in the magnitude of the replacement rates is far less stark between the model where the standard errors are corrected for clustering and where the random effects model was estimated. Both of those cases suggest that increasing the replacement rate from 0 to 11.7 percent would lead to an increase in food stamp participation of approximately one percentage point. This is still important in economic terms, because the baseline participation rate is around 10 percent. The estimates including household fixed effects are much smaller in magnitude and statistically insignificant, however.

The results in Table 10 also show far less contrast between the models corrected for clustering and the ones estimated with random effects. Interestingly, the magnitudes of the effects in columns (4)-(6) are not dramatically different than the estimates in columns (1)-(3). The increase in the replacement rate leads to an increase in Medicaid participation of 2.1 to 3.3 percentage points, from a baseline of 12.9 percent. The marginal take-up rates for completely covering a family vary between 17.7 and 27.9 percent, and bracket the estimate of Cutler and Gruber (1996, Table IV, page 408). Comparing the results for food stamps and Medicaid in columns (4) or (5) suggest that for every 100 households who participated in Medicaid as a result of the expansions, approximately 27 to 31 also participated in food stamps. These results are fairly similar to the results of Corson and McConnell (1990), who found that an increase of 100 Medicaid recipients generated an increase of 19 to 30 food stamp participants.

Tables 9 and 10 also include other important covariates that deserve discussion. Since most of the other covariates are similar regardless of whether instrumental variables were used, I will focus attention on the IV results. The tables measure income volatility with the standard deviation in household income across the SIPP panel. Since this variable is measured at the household level and is does not change over time within a household, it cannot be estimated in the fixed effects models in columns (3) and (6). The other models suggest that income volatility has a significant negative effect on food stamp participation. Moving from the 25th percentile to the 75th percentile in income variability would result in the standard deviation of household income going up from $418 to $1,282 per year. An increase in income volatility of this magnitude would reduce food stamp participation by 1.3 to 2.0 percentage points, clearly a very large effect. As seen in Table 10, income volatility also reduces Medicaid participation, with slightly larger magnitudes.

The head's and spouse's characteristics affect food stamp participation in fairly predictable ways.[14] Families with heads who are older, more educated, white, male, or married heads are less likely to participate in food stamps and Medicaid. The final two variables in the table are controls for a woman's pregnancy and the woman's delivery month. It is important to include these controls because the replacement rate uses these characteristics in its calculation. The main effects show strong, but very inconsistent patterns across specifications for the month in which the baby was born. On the other hand, both food stamp and Medicaid participation

[14] The reason the head's and spouse's characteristics can be estimated in the household fixed effects model is mainly because some families have a change in headship status over the course of the panel. Nonetheless, the coefficients in the other models are probably more interpretable.

increase during the pregnancy (but again, the magnitudes vary widely).

VII.B. Do Outreach efforts matter? Are they well targeted?

The other key policy is outreach efforts. The models are now modified to include an interaction term between "aggressive" outreach states and the Medicaid replacement rates, as well as a main effect for "aggressive" states. The equations now:

$$(5') \quad FSP_{jt} = \beta_0 + \beta_1 RR_{jt} + \beta_2 X_{jt} + \beta_3 DEMOG_{jt} + \beta_4 PREG_{jt} + \beta_5 RR_{jt} AGGRESIVE_{jt} + \beta_6 AGGRESSIVE_{jt} + \sum_s \delta_{1s} D_s + \sum_t \delta_{1t} D_t + \varepsilon_{1jt}$$

$$(6') \quad MC_{jt} = \gamma_0 + \gamma_1 RR_{jt} + \gamma_2 X_{jt} + \gamma_3 DEMOG_{jt} + \gamma_4 PREG_{jt} + \gamma_5 RR_{jt} AGGRESSIVE_{jt} + \gamma_6 AGGRESSIVE_{jt} + \sum_s \delta_{2s} D_s + \sum_t \delta_{2t} D_t + \varepsilon_{2jt}$$

where all of the variables are defined as before, and $AGGRESSIVE_{jt}$ is a dummy variable indicating that a state is aggressive in its outreach efforts. It is expected that the coefficients $\$_5$ and $(_5$ will be positive, meaning that eligible households in aggressive states will have larger participation responses than ineligible households in those states. Further it is expected that $\$_6$ and $(_6$ will be positive, meaning that outreach efforts may increase participation for all households – for example, television publicity campaigns may increase the overall awareness and information about food stamps and Medicaid.

As mentioned before, information on outreach efforts only exists in a systematic form from January 1990 onward. I therefore restrict my sample to the 333,302 observations on

58,493 households who are in the sample after that date. Before turning to the results that incorporate outreach efforts, I replicate the basic results on this restricted sample in Tables 11 and 12. Compared to the results for the entire period, the instrumental variables results are quite similar for food stamp participation. One notable change is that the fixed effects estimate using instrumental variables is now marginally significant (and about half the magnitude of the random effects estimator). The results of the replacement rate on Medicaid participation are very similar between Tables 10 (for the full period) and Table 12 (for the restricted period). Restricting the time frame from 1990 to 2000 does not affect the results in any meaningful way.

Tables 13 and 14 show the results that include outreach efforts. In examining food stamp participation in Table 13, the main effect of the Medicaid replacement rate is very similar to the models without outreach efforts (though the coefficient estimates go up slightly and the instrumental variables fixed effect estimate is significant at conventional levels). The results on outreach efforts vary to some extent between the instrumental variables estimates and the non-IV estimates. The non-IV estimates in columns (1)-(3) suggest a strong negative interaction between the replacement rate and outreach efforts. This can be interpreted in many ways, but suggests the outreach efforts were not well targeted because participation of eligibles in food stamps fell relative to ineligible in aggressive states. On the other hand, the main effect of outreach efforts is positive in columns (1)-(3), suggesting they increased overall food stamp participation.

Unfortunately, none of these results on outreach are particularly robust once an instrumental variables strategy is used. In this case, there are two endogenous variables – RR_{jt} and $RR_{jt}AGGRESSIVE_{jt}$. These are instrumented with the simulated replacement rate and the

simulated replacement rate interacted with the state outreach measure. As the results in columns (4)-(6) of Table 13 show, there appears to be a negative, and occasionally significant interaction between the replacement rate and outreach efforts. Again, this suggests that outreach efforts were not well targeted. The main effect of state outreach is insignificant.

These results on outreach efforts carry over to Medicaid participation as well, in Table 14. The main effect of the replacement rate is remarkably uniform across the different IV specifications, but the interaction between the replacement rate and outreach efforts is usually negative (though insignificant). The main effect of outreach efforts is negative as well. This suggests that states may have been implementing aggressive outreach campaigns when Medicaid enrollments were falling – that is, outreach efforts may have been a response to welfare caseloads, so the causality goes in both directions.

VIII. Conclusions

The main goal of this study was to explore program interactions between Medicaid and food stamps and to explore the effects of income volatility. This was done by using nearly 500,000 household observations from the SIPP spanning the years 1983 to 2000. The findings suggest several robust results. Medicaid eligibility, as represented by the "household replacement rate," generally has strong positive effects on Medicaid participation and part of this spilled over to food stamp participation. This result holds even when instrumental variables are used to correct measurement error, omitted variables bias, and endogeneity. The results also suggest that income volatility matters for food stamp participation. The magnitude of the spillover effects are similar to some previous studies that used data from earlier periods. Within

the SIPP panel, a household-level measure of income volatility was constructed. Moving from the 25th percentile to the 75th percentile in income variability would result in a sizable reduction food stamp participation. Finally, the results on Medicaid outreach efforts and publicity campaigns is mixed. When states were aggressive in their outreach campaigns, food stamp participation generally increased, but it increased less for Medicaid-eligible households than Medicaid-ineligible households. This find suggests that the outreach campaigns were poorly targeted.

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TABLE 1

Medicaid expansion generosity for all children, expressed as a fraction of the poverty line, averaged over all months within the year.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AL	0	3	8	35	47	57	62	67	78	92	96	147	200	200
AK	0	0	5	33	47	57	62	67	72	78	83	88	173	189
AZ	0	8	11	38	51	69	105	129	134	140	121	129	165	195
AR	4	15	27	40	50	57	62	67	72	78	118	189	189	189
CA	0	0	15	40	47	57	62	67	74	81	87	152	205	242
CO	0	0	2	32	47	57	62	67	72	78	83	160	185	185
CT	0	7	15	37	47	57	70	95	115	125	149	243	300	300
DE	0	6	11	35	47	70	110	110	112	113	113	113	193	200
DC	4	6	11	39	51	57	62	67	74	80	86	118	200	200
FL	2	12	27	40	49	57	62	67	89	113	107	161	189	189
GA	0	0	9	35	47	57	86	110	112	113	113	142	200	218
HI	0	0	5	45	51	57	62	67	76	81	87	97	102	163
ID	0	0	4	32	47	57	62	67	72	78	102	155	150	150
IL	0	3	5	33	47	57	62	67	72	78	83	155	186	186
IN	0	1	7	35	47	57	62	67	73	79	99	131	150	150
IA	0	0	21	42	49	57	62	67	74	80	86	113	185	193
KS	0	4	17	39	47	57	62	67	79	95	97	150	200	200
KY	2	10	12	34	47	57	62	67	89	113	107	101	141	200
LA	0	0	30	44	51	57	62	67	72	78	88	113	150	150
ME	0	7	29	62	128	128	128	128	129	130	130	153	189	200
MD	3	6	25	45	51	57	79	105	115	125	134	171	200	200
MA	3	16	30	40	47	57	83	88	101	80	96	158	200	200
MI	0	10	18	37	47	57	62	67	123	136	144	183	200	200
MN	0	5	23	45	50	86	261	261	261	261	261	264	276	276
MS	2	10	18	39	47	57	62	67	74	80	106	113	113	200
MO	0	7	14	35	47	57	105	105	106	108	108	172	300	300
MT	0	0	3	36	51	57	62	67	72	78	83	150	150	150
NE	0	13	26	38	47	57	62	67	73	79	84	128	185	185
NV	0	0	2	32	47	57	62	67	72	78	83	116	200	200
NH	0	0	2	32	47	57	98	142	185	185	185	189	300	300
NJ	3	8	11	34	49	63	80	85	90	95	101	187	275	350
NM	0	8	15	36	49	59	65	70	120	185	185	185	223	235
NY	0	0	0	36	50	127	127	111	105	80	86	161	192	236
NC	2	9	17	40	50	59	65	70	105	108	108	131	200	200
ND	0	0	2	32	47	57	62	67	85	105	105	106	118	140
OH	0	0	5	33	47	57	62	67	72	78	83	150	150	175
OK	0	8	13	36	47	57	63	68	73	80	90	149	175	175
OR	1	8	15	35	47	57	62	67	88	110	110	140	170	170
PA	0	8	15	36	47	57	83	101	116	125	134	169	189	189
RI	12	26	35	43	50	59	65	71	79	81	189	250	250	250
SC	2	9	17	39	50	59	65	70	75	80	107	152	152	152
SD	0	3	5	33	47	57	62	67	73	108	110	122	138	170
TN	3	15	27	39	49	59	65	70	75	80	95	124	124	124
TX	0	3	13	37	47	59	65	70	75	80	86	101	113	171
UT	0	0	5	33	47	57	62	67	102	105	105	145	200	200
VT	2	29	60	51	50	136	213	213	213	213	213	235	300	300
VA	0	3	5	33	47	57	86	110	110	110	110	123	185	185
WA	3	9	21	43	113	113	113	157	200	200	200	200	200	250
WV	3	17	33	41	48	58	106	150	150	150	150	150	150	158
WI	0	5	7	34	53	62	68	73	82	91	97	102	128	136
WY	0	1	5	33	47	57	62	67	72	78	83	88	94	99

Notes: The Medicaid rules come from various publications of the Intergovernmental Health Policy Project and the National Governors' Association. The later rules about Medicaid and SCHIP come from http://www.hcfa.gov/init/chpa-map.htm.

TABLE 2

Medicaid expansion generosity for infants, expressed as a fraction of the poverty line, averaged over all months within the year.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AL	0	50	143	159	133	133	133	133	155	185	185	191	200	200
AK	0	0	100	125	133	133	133	133	133	133	133	133	189	200
AZ	0	100	100	125	133	133	192	250	250	250	177	145	169	200
AR	56	88	100	125	133	133	133	133	133	133	155	200	200	200
CA	0	0	93	159	133	133	133	133	161	200	200	225	250	250
CO	0	0	38	119	133	133	133	133	133	133	133	172	185	185
CT	0	118	185	159	133	133	159	185	185	185	185	243	300	300
DE	0	100	100	125	133	133	133	133	155	185	185	185	199	200
DC	75	100	100	138	133	133	133	133	155	185	185	189	200	200
FL	25	100	125	142	133	133	133	133	155	185	185	193	200	200
GA	0	0	100	125	133	133	133	133	155	185	185	190	200	218
HI	0	0	100	159	133	133	133	133	203	195	214	300	300	300
ID	0	0	71	119	133	133	133	133	133	133	140	155	150	150
IL	0	50	100	125	133	133	133	133	133	133	133	161	200	200
IN	0	25	75	125	133	133	133	133	140	150	150	150	150	150
IA	0	0	168	159	133	133	133	133	155	185	185	185	185	193
KS	0	75	150	142	133	133	133	133	140	150	150	175	200	200
KY	25	113	125	131	133	133	133	133	155	185	185	185	188	200
LA	0	0	100	125	133	133	133	133	133	133	133	136	150	150
ME	0	46	185	159	133	133	133	133	155	185	185	185	189	200
MD	50	100	150	159	133	133	159	185	185	185	185	193	200	200
MA	50	143	185	159	133	133	200	200	194	185	185	191	200	200
MI	0	143	185	159	133	133	133	133	163	185	185	195	200	200
MN	0	93	185	159	133	146	275	275	275	275	275	276	280	280
MS	25	143	185	159	133	133	133	133	155	185	185	185	185	200
MO	0	100	100	125	133	133	133	133	155	185	185	223	300	300
MT	0	0	50	125	133	133	133	133	133	133	133	150	150	150
NE	0	50	100	125	133	133	133	133	140	150	150	162	185	185
NV	0	0	38	119	133	133	133	133	133	133	133	150	200	200
NH	0	0	38	119	133	142	170	178	185	185	185	262	300	300
NJ	50	100	100	125	159	214	300	300	300	300	300	207	275	350
NM	0	100	100	125	159	185	185	185	185	185	185	185	223	235
NY	0	0	0	185	185	185	185	185	185	185	185	185	192	236
NC	25	100	100	159	185	185	185	185	185	185	185	189	200	200
ND	0	0	38	119	133	133	133	133	133	133	133	133	135	140
OH	0	0	100	125	133	133	133	133	133	133	133	150	150	175
OK	0	100	100	125	133	146	150	150	150	182	179	185	185	185
OR	14	90	100	125	133	133	133	133	133	133	133	152	170	170
PA	0	75	100	125	133	133	185	185	185	185	185	194	200	200
RI	75	121	185	185	185	185	185	212	250	190	228	250	250	250
SC	25	100	143	185	185	185	185	185	185	185	185	185	185	185
SD	0	50	100	125	133	133	133	133	133	133	133	133	138	170
TN	50	100	100	125	168	185	185	185	185	185	239	400	400	400
TX	0	43	130	132	133	176	185	185	185	185	185	185	185	195
UT	0	0	100	125	133	133	133	133	133	133	133	161	200	200
VT	25	163	225	199	185	205	225	225	225	225	225	244	300	300
VA	0	50	100	125	133	133	133	133	133	133	133	142	185	185
WA	48	100	135	185	185	185	185	193	200	200	200	200	200	250
WV	50	125	150	150	150	150	150	150	150	150	150	150	150	158
WI	0	90	124	143	155	155	155	155	168	185	185	185	185	185
WY	0	25	100	125	133	133	133	133	133	133	133	133	133	133

Notes: The Medicaid rules come from various publications of the Intergovernmental Health Policy Project and the National Governors' Association. The later rules about Medicaid and SCHIP come from http://www.hcfa.gov/init/chpa-map.htm.

TABLE 3

Medicaid expansion generosity for children aged 1-5, expressed as a fraction of the poverty line, averaged over all months within the year.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AL	0	0	0	99.8	133	133	133	133	133	133	133	161	200	200
AK	0	0	0	101	133	133	133	133	133	133	133	133	189	200
AZ	0	10.8	20	105	133	133	192	250	250	250	172	142	169	200
AR	4.69	40.7	82.9	125	133	133	133	133	133	133	155	200	200	200
CA	0	0	40	120	133	133	133	133	133	133	133	167	208	250
CO	0	0	0	99.8	133	133	133	133	133	133	133	172	185	185
CT	0	2.92	20.8	108	133	133	159	185	185	185	185	243	300	300
DE	0	2.92	20.8	108	133	133	133	133	133	133	133	133	194	200
DC	0	2.92	20.8	108	133	133	133	133	133	133	133	150	200	200
FL	0.83	25.8	75.8	122	133	133	133	133	133	133	133	180	200	200
GA	0	0	15.8	107	133	133	133	133	133	133	133	155	200	218
HI	0	0	0	125	133	133	133	133	133	133	133	133	133	193
ID	0	0	0	99.8	133	133	133	133	133	133	140	155	150	150
IL	0	0	0	99.8	133	133	133	133	133	133	133	155	185	185
IN	0	0	12.9	108	133	133	133	133	133	133	133	142	150	150
IA	0	0	45.8	123	133	133	133	133	133	133	133	133	185	193
KS	0	0	32.9	118	133	133	133	133	133	133	133	167	200	200
KY	0.83	15	20	105	133	133	133	133	133	133	133	133	150	200
LA	0	0	95	125	133	133	133	133	133	133	133	136	150	150
ME	0	15.8	75	120	133	133	133	133	133	133	133	155	189	200
MD	0	2.92	63.8	125	133	133	159	185	185	185	185	193	200	200
MA	0	32.9	77.9	120	133	133	200	200	172	133	133	161	200	200
MI	0	10.8	30.8	111	133	133	133	133	149	150	150	183	200	200
MN	0	0	49.6	125	133	146	275	275	275	275	275	275	276	276
MS	0.83	10	32.9	118	133	133	133	133	133	133	133	133	133	200
MO	0	5.83	35	110	133	133	133	133	133	133	133	189	300	300
MT	0	0	0	99.8	133	133	133	133	133	133	133	150	150	150
NE	0	39.6	80	120	133	133	133	133	133	133	133	150	185	185
NV	0	0	0	99.8	133	133	133	133	133	133	133	150	200	200
NH	0	0	0	99.8	133	133	170	178	185	185	185	185	300	300
NJ	0	10.8	20	105	133	141	166	166	166	166	166	192	275	350
NM	0	12.1	35.8	112	133	133	133	133	155	185	185	185	223	235
NY	0	0	0	99.8	133	185	185	160	149	133	133	172	192	236
NC	0.83	15.8	45.8	122	133	133	133	133	133	133	133	150	200	200
ND	0	0	0	99.8	133	133	133	133	133	133	133	133	135	140
OH	0	0	0	99.8	133	133	133	133	133	133	133	150	150	175
OK	0	10.8	30.8	111	133	133	133	133	133	133	137	185	185	185
OR	0.35	14.2	36.1	110	133	133	133	133	133	133	133	152	170	170
PA	0	13.8	35.8	112	133	133	172	185	185	185	185	194	200	200
RI	30.4	75.8	95	125	133	133	133	133	133	133	211	250	250	250
SC	0.83	15.8	35.8	112	133	133	133	133	133	133	139	150	150	150
SD	0	0	0	99.8	133	133	133	133	133	133	133	133	138	170
TN	0.83	38.3	80.8	123	133	133	133	133	133	133	133	133	133	133
TX	0	1.39	24.2	112	133	133	133	133	133	133	133	133	133	178
UT	0	0	0	99.8	133	133	133	133	133	133	133	161	200	200
VT	0.83	79.5	182	152	133	179	225	225	225	225	225	244	300	300
VA	0	0	0	99.8	133	133	133	133	133	133	133	142	185	185
WA	0.83	15	53.2	125	133	133	133	167	200	200	200	200	200	250
WV	0	40.4	95	125	133	133	142	150	150	150	150	150	150	158
WI	0	0	0	99.8	151	151	151	151	161	175	175	175	143	133
WY	0	0	0	99.8	133	133	133	133	133	133	133	133	133	133

Notes: The Medicaid rules come from various publications of the Intergovernmental Health Policy Project and the National Governors' Association. The later rules about Medicaid and SCHIP come from http://www.hcfa.gov/init/chpa-map.htm.

TABLE 4

Medicaid expansion generosity for children aged 6-11, expressed as a fraction of the poverty line, averaged over all months within calendar year.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AL	0	0	0	0	17	46.5	63.2	79.9	110	133	125	142	200	200
AK	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	183	200
AZ	0	0	0	11.5	29.2	71.2	100	100	100	100	100	125	169	200
AR	0	0	0.69	1.74	25.3	46.5	63.2	79.9	95.8	100	133	200	200	200
CA	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	150	208	250
CO	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	164	185	185
CT	0	0	0	0	17	46.5	63.2	116	177	185	185	243	300	300
DE	0	0	0	0	17	58.3	100	100	100	100	100	100	192	200
DC	0	0	0	11.5	29.2	46.5	63.2	79.9	95.8	100	100	125	200	200
FL	0	0	0	0.69	21.5	46.5	63.2	79.9	95.9	100	100	171	200	200
GA	0	0	0	0	17	46.5	79.5	100	100	100	100	133	200	218
HI	0	0	0	13.2	29.2	46.5	63.2	79.9	95.8	100	100	100	100	150
ID	0	0	0	0	17	46.5	63.2	79.9	95.8	100	115	155	150	150
IL	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	155	185	185
IN	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	125	150	150
IA	0	0	0	2.43	22.9	46.5	63.2	79.9	95.8	100	100	117	185	193
KS	0	0	0	0	17	46.5	63.2	79.9	95.9	100	100	150	200	200
KY	0	0	0	0	17	46.5	63.2	79.9	95.9	100	100	100	133	200
LA	0	0	0.69	13.2	29.2	46.5	63.2	79.9	95.8	100	100	108	150	150
ME	0	0	0	35.1	125	125	125	125	125	125	125	150	189	200
MD	0	0	0.69	13.2	29.2	46.5	91.8	148	177	185	185	193	200	200
MA	0	0	0	0	17	46.5	63.2	79.9	143	100	108	161	200	200
MI	0	0	0	0	17	46.5	63.2	79.9	145	150	150	183	200	200
MN	0	0	0.69	12.5	24.7	79.6	275	275	275	275	275	275	275	275
MS	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	100	200
MO	0	0	0	0	17	46.5	100	100	100	100	100	167	300	300
MT	0	0	0	8.68	29.9	46.5	63.2	79.9	95.8	100	100	150	150	150
NE	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	128	185	185
NV	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	125	200	200
NH	0	0	0	0	17	46.5	142	163	185	185	185	185	300	300
NJ	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	186	275	350
NM	0	0	0	0	17	46.5	63.2	79.9	131	185	185	185	223	235
NY	0	0	0	0	17	185	185	160	135	100	100	164	192	236
NC	0	0	0	0	17	46.5	63.2	79.9	99.1	100	100	125	200	200
ND	0	0	0	0	17	46.5	63.2	79.9	95.9	100	100	100	110	140
OH	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	150	150	175
OK	0	0	0	0	17	46.5	63.2	79.9	95.8	100	107	185	185	185
OR	0	0	0	0	17	46.5	63.2	79.9	95.9	100	100	135	170	170
PA	0	0	0	0	17	46.5	89.2	136	181	185	185	194	200	200
RI	0	0	0	0	17	46.5	63.2	79.9	95.8	100	200	250	250	250
SC	0	0	0	0	17	46.5	63.2	79.9	95.8	100	117	150	150	150
SD	0	0	0	0	17	46.5	63.2	79.9	95.9	100	100	117	138	170
TN	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	100	100
TX	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	100	167
UT	0	0	0	0	17	46.5	63.2	79.9	99.1	100	100	142	200	200
VT	0	0	0	0	17	134	225	225	225	225	225	244	300	300
VA	0	0	0	0	17	46.5	79.5	100	100	100	100	114	185	185
WA	0	0	0.69	1.74	100	100	100	150	200	200	200	200	200	250
WV	0	0	0.69	1.74	17	46.5	105	150	150	150	150	150	150	158
WI	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	125	133
WY	0	0	0	0	17	46.5	63.2	79.9	95.8	100	100	100	100	100

Notes: The Medicaid rules come from various publications of the Intergovernmental Health Policy Project and the National Governors' Association. The later rules about Medicaid and SCHIP come from http://www.hcfa.gov/init/chpa-map.htm.

TABLE 5

Medicaid expansion generosity for children aged 12-17, expressed as a fraction of the poverty line, averaged over all months within the year.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AL	0	0	0	0	0	0	0	0	0.79	15	31.5	136	200	200
AK	0	0	0	0	0	0	0	0	0.6	11.3	25.6	39.9	151	171
AZ	0	0	0	0	0	12.8	36.3	50.6	64.9	79.2	93.5	121	159	186
AR	0	0	0	0	0	0	0	0	0.6	11.3	72.6	171	171	171
CA	0	0	0	0	0	0	0	0	0.6	11.3	25.6	132	193	229
CO	0	0	0	0	0	0	0	0	0.6	11.3	25.6	147	185	185
CT	0	0	0	0	0	0	0	0	1.1	20.9	87	243	300	300
DE	0	0	0	0	0	25	100	100	100	100	100	100	192	200
DC	0	0	0	0	0	0	0	0	0.6	11.3	25.6	78.6	200	200
FL	0	0	0	0	0	0	0	0	41.7	100	82.7	134	171	171
GA	0	0	0	0	0	0	50	100	100	100	100	133	200	218
HI	0	0	0	0	0	0	0	0	0.6	11.3	25.6	39.9	54.2	132
ID	0	0	0	0	0	0	0	0	0.6	11.3	57.9	155	150	150
IL	0	0	0	0	0	0	0	0	0.6	11.3	25.6	155	185	185
IN	0	0	0	0	0	0	0	0	0.6	11.3	67.3	125	150	150
IA	0	0	0	0	0	0	0	0	0.6	11.3	25.6	84.7	185	193
KS	0	0	0	0	0	0	0	0	17.9	56	60.7	136	200	200
KY	0	0	0	0	0	0	0	0	41.7	100	82.7	68.2	133	200
LA	0	0	0	0	0	0	0	0	0.6	11.3	39.3	96.4	150	150
ME	0	0	0	31.3	125	125	125	125	125	125	125	150	189	200
MD	0	0	0	0	0	0	0	0	1.1	20.9	47.4	134	200	200
MA	0	0	0	0	0	0	0	0	0.6	11.3	46.4	150	200	200
MI	0	0	0	0	0	0	0	0	80.2	108	129	181	200	200
MN	0	0	0	0	0	39.6	236	236	236	236	236	246	275	275
MS	0	0	0	0	0	0	0	0	0.6	11.3	80.1	100	100	200
MO	0	0	0	0	0	0	85.7	85.7	85.7	85.7	85.7	157	300	300
MT	0	0	0	0	0	0	0	0	0.6	11.3	25.6	150	150	150
NE	0	0	0	0	0	0	0	0	0.6	11.3	25.6	107	185	185
NV	0	0	0	0	0	0	0	0	0.6	11.3	25.6	78.6	200	200
NH	0	0	0	0	0	0	0	92.5	185	185	185	185	300	300
NJ	0	0	0	0	0	0	0	0	0.6	11.3	25.6	181	275	350
NM	0	0	0	0	0	0	0	0	77.1	185	185	185	223	235
NY	0	0	0	0	0	26.4	26.4	22.9	36.8	11.3	25.6	147	192	236
NC	0	0	0	0	0	0	0	0	78.6	85.7	85.7	114	200	200
ND	0	0	0	0	0	0	0	0	35.7	85.7	85.7	89.3	110	140
OH	0	0	0	0	0	0	0	0	0.6	11.3	25.6	150	150	175
OK	0	0	0	0	0	0	0	0	0.6	11.3	27.9	86.1	159	159
OR	0	0	0	0	0	0	0	0	41.7	100	100	135	170	170
PA	0	0	0	0	0	0	0	0	1.1	20.9	47.4	128	171	171
RI	0	0	0	0	0	0	0	0	0.6	11.3	159	250	250	250
SC	0	0	0	0	0	0	0	0	0.6	11.3	65.5	150	150	150
SD	0	0	0	0	0	0	0	0	1.98	92.4	100	117	138	170
TN	0	0	0	0	0	0	0	0	0.6	11.3	42.9	100	100	100
TX	0	0	0	0	0	0	0	0	0.6	11.3	25.6	68.2	100	167
UT	0	0	0	0	0	0	0	0	78.6	85.7	85.7	133	200	200
VT	0	0	0	0	0	96.4	193	193	193	193	193	220	300	300
VA	0	0	0	0	0	0	50	100	100	100	100	114	185	185
WA	0	0	0	0	100	100	100	150	200	200	200	200	200	250
WV	0	0	0	0	0	0	75	150	150	150	150	150	150	158
WI	0	0	0	0	0	0	0	0	0.6	11.3	25.6	39.9	112	133
WY	0	0	0	0	0	0	0	0	0.6	11.3	25.6	39.9	54.2	68.5

Notes: The Medicaid rules come from various publications of the Intergovernmental Health Policy Project and the National Governors' Association. The later rules about Medicaid and SCHIP come from http://www.hcfa.gov/init/chpa-map.htm.

TABLE 6

State Outreach Efforts - Number of services offered by different states (measured as of July or August)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Maximum	6	7	8	8	8	8	6	7	12
Median	4	5	5	6	6	6	4	5	9
AL	5	6	7	7	1	7	5	5	10
AK	3	4	5	5	5	5	3	5	0
AZ	2	4	4	4	4	4	2	4	0
AR	4	5	5	4	4	4	2	5	6
CA	1	2	2	4	5	6	4	5	11
CO	4	5	6	6	6	6	4	6	11
CT	2	5	6	8	8	8	6	6	11
DE	5	5	4	5	6	7	5	6	9
DC	2	4	5	6	7	7	---	---	8
FL	5	5	5	6	6	6	4	4	9
GA	4	6	4	8	8	8	6	6	10
HI	3	4	7	6	6	7	5	4	0
ID	3	5	4	5	5	5	3	2	5
IL	2	4	6	6	6	7	5	5	10
IN	3	4	5	5	5	5	3	4	12
IA	2	3	4	5	5	5	3	4	7
KS	2	5	4	5	5	5	3	2	0
KY	4	4	6	5	5	5	3	4	12
LA	5	5	5	6	6	6	5	5	0
ME	3	5	5	6	6	6	3	5	5
MD	4	5	6	6	6	7	5	5	9
MA	4	6	7	8	8	8	6	5	11
MI	3	5	5	5	5	5	3	6	12
MN	4	5	5	5	5	5	4	3	10
MS	3	5	5	4	4	5	3	5	0
MO	5	4	6	7	7	7	6	5	11
MT	1	4	4	4	4	5	3	1	10
NE	3	4	4	4	4	5	3	5	12
NV	1	3	3	2	2	3	1	2	9
NH	2	3	4	7	8	8	6	5	12
NJ	4	5	6	6	6	7	5	6	10
NM	4	5	6	6	6	8	6	5	12
NY	3	5	4	4	5	5	3	6	11
NC	5	5	5	7	7	8	6	4	11
ND	0	3	3	3	3	2	0	3	0
OH	4	6	6	7	7	8	6	6	10
OK	2	5	5	5	5	6	4	5	9
OR	4	5	6	5	5	6	4	5	8
PA	2	4	5	7	7	7	6	6	11
RI	1	3	4	5	5	6	4	4	8
SC	4	4	6	6	6	6	4	6	10
SD	3	4	4	5	5	5	3	3	7
TN	4	5	5	7	7	7	5	4	9
TX	4	4	5	6	6	6	4	5	5
UT	4	4	5	6	5	6	4	6	11
VT	5	6	6	6	6	6	4	6	8
VA	5	5	7	6	6	6	4	6	10
WA	4	6	5	7	7	7	5	4	0
WV	5	6	7	6	6	7	5	5	9
WI	5	6	5	6	6	6	4	6	10
WY	2	3	7	6	7	7	5	6	0

Notes: Outreach efforts were taken from the National Governors' Association "MCH Update" between January 1990 and February 1995. The information after 1995 was taken from on-line NGA publications. The information for Washington D.C. was not available in 1996 and 1997.

TABLE 7
Income limits from Medicaid expansions expressed as percentage of poverty line in a typical state

	Pregnant women	Infants, age 0	Ages 1-5	Ages 6-8	Ages 10-17	Ages 18 and beyond
January 1990	150	150	100	0	0	0
January 1992	185	185	133	100	0	0

Notes: The numbers in the table reflect eligibility from the Medicaid expansions only. Eligibility was available to children and/or pregnant women in either married or single households. Children in single households could also qualify for Medicaid through AFDC, but that is not reflected in these charts.

TABLE 8
Summary Statistics from the SIPP sample

	SIPP Sample - 1983 to 2000			SIPP Sample - 1990 to 2000		
	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Food stamp participation	0.1005	0.3007	[0,1]	0.1076	0.3099	[0,1]
Medicaid participation	0.129	0.3352	[0,1]	0.1507	0.3577	[0,1]
Monthly household income (nominal dollars)	3439	3135	[-9175,109970]	3822	3447	[-8054,109970]
Standard deviation of household income	1073	1267	[0,36907]	1188	1416	[0,36907]
State above the median for outreach (only for 1990 and beyond)	N/A			0.3707	0.483	[0,1]
Household replacement rate based on actual Medicaid eligibility	0.0483	0.1411	[0,1]	0.0708	0.166	[0,1]
Household replacement rate based on instrumented Medicaid eligibility	0.155	0.1996	[0,1]	0.225	0.2042	[0,1]
Head's age	38.036	9.1858	[0,64]	38.297	8.5803	[15,64]
Head's education less than 9 years	0.0609	0.2392	[0,1]	0.0542	0.2265	[0,1]
Head's education between 9 and 11 year	0.1039	0.3052	[0,1]	0.096	0.2946	[0,1]
Head's education 12 years	0.3264	0.4689	[0,1]	0.3178	0.4656	[0,1]
Heads education between 13 and 15 years	0.265	0.4414	[0,1]	0.2817	0.4498	[0,1]
Heads education greater than 15 years	0.1752	0.3801	[0,1]	0.194	0.3954	[0,1]
Head is white	0.8382	0.3683	[0,1]	0.8278	0.3776	[0,1]
Head is black	0.1247	0.3304	[0,1]	0.131	0.3373	[0,1]
Head is other race	0.0371	0.1891	[0,1]	0.0412	0.1989	[0,1]
Head is Hispanic	0.1016	0.3021	[0,1]	0.113	0.3166	[0,1]
Head is male	0.6836	0.4651	[0,1]	0.6487	0.4774	[0,1]
Head currently married	0.774	0.4182	[0,1]	0.7689	0.4215	[0,1]
Head currently widow	0.0206	0.1422	[0,1]	0.0183	0.134	[0,1]
Head currently divorced/separated	0.1472	0.3543	[0,1]	0.1498	0.3569	[0,1]
Head currently never-married	0.0582	0.2341	[0,1]	0.063	0.243	[0,1]
Head is veteran	0.1985	0.3989	[0,1]	0.1626	0.369	[0,1]
Spouse's age	27.944	17.1928	[0,64]	28.052	17.2622	[0,64]
Spouse's education less than 9 years	0.0394	0.1945	[0,1]	0.0378	0.1907	[0,1]
Spouse's education between 9 and 11 year	0.0668	0.2497	[0,1]	0.0588	0.2353	[0,1]
Spouse's education 12 years	0.2817	0.4499	[0,1]	0.2611	0.4392	[0,1]
Spouses education between 13 and 15 years	0.2031	0.4023	[0,1]	0.2138	0.41	[0,1]
Spouses education greater than 15 years	0.1379	0.3448	[0,1]	0.1548	0.3617	[0,1]
Spouse is white	0.6767	0.4677	[0,1]	0.6659	0.4717	[0,1]
Spouse is black	0.0565	0.231	[0,1]	0.0583	0.2343	[0,1]
Spouse is other race	0.0319	0.1758	[0,1]	0.0351	0.1841	[0,1]
Spouse is Hispanic	0.0742	0.262	[0,1]	0.0829	0.2758	[0,1]
Spouse is male	0.1173	0.3217	[0,1]	0.1448	0.3519	[0,1]
Spouse is veteran	0.0323	0.1769	[0,1]	0.0355	0.185	[0,1]
Spouse present	0.7651	0.4239	[0,1]	0.7593	0.4275	[0,1]
Number of 0-year-olds present	0.0806	0.2784	[0,3]	0.0794	0.2775	[0,3]
Number of 1-year-olds present	0.0864	0.2875	[0,4]	0.0864	0.2883	[0,4]
Number of 2 to 5-year-olds present	0.3796	0.6162	[0,6]	0.3874	0.6215	[0,6]
Number of 6 to 9-year-olds present	0.3911	0.6216	[0,5]	0.4095	0.6322	[0,5]
Number of 10 to 14-year-olds present	0.4814	0.7035	[0,6]	0.5002	0.7124	[0,5]
Number of 15 to 18-year-olds present	0.3564	0.5995	[0,7]	0.3534	0.5922	[0,4]
Number of 19 to 29-year-old males present	0.2166	0.4489	[0,5]	0.2	0.434	[0,5]
Number of 30 to 39-year-old males present	0.3284	0.4723	[0,3]	0.3283	0.4725	[0,3]
Number of 40 to 49-year-old males present	0.2634	0.4416	[0,3]	0.2804	0.4502	[0,3]
Number of 50 to 59-year-old males present	0.0825	0.2759	[0,2]	0.0785	0.2693	[0,2]
Number of 60 to 64-year-old males present	0.016	0.1267	[0,2]	0.011	0.1045	[0,2]
Number of 19 to 29-year-old females present	0.28	0.4696	[0,5]	0.261	0.4575	[0,4]
Number of 30 to 39-year-old females present	0.4174	0.4947	[0,3]	0.4282	0.4965	[0,3]
Number of 40 to 49-year-old females present	0.2706	0.4455	[0,3]	0.2904	0.4551	[0,3]
Number of 50 to 59-year-old females present	0.0616	0.2415	[0,3]	0.0569	0.2324	[0,3]
Number of 60 to 64-year-old females present	0.012	0.11	[0,2]	0.0086	0.0922	[0,2]
Woman in household is pregnant this month	0.0183	0.1340	[0,1]	0.0188	0.1358	[0,1]

Woman in household delivered child this month	0.0033	0.0572	[0,1]	0.0031	0.0560	[0,1]

Notes: There are 497,786 observations on 95,833 households in the 1983 to 2000 sample, and 333,302 observations on 58,493 households in the 1990 to 2000 sample.

TABLE 9
Food Stamp Participation, 1983-2000

	(1) FSP, Std. Errors corrected for clustering	(2) FSP, Random effects	(3) FSP, Fixed effects	(4) FSP, IV, Std. Errors corrected for clustering	(5) FSP, IV, Random effects	(6) FSP, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.3792	0.1523	0.0881	0.0871	0.0635	0.0113
	(0.0087)	(0.0028)	(0.0029)	(0.0177)	(0.0106)	(0.0135)
$\frac{Income}{10000}$	-0.5563	-0.1727	-0.0868	-0.6725	-0.2228	-0.1127
	(0.0228)	(0.0036)	(0.0037)	(0.0254)	(0.0051)	(0.0058)
$\left(\frac{Income}{10000}\right)^2$	0.4805	0.1341	0.0665	0.5599	0.1685	0.0827
	(0.0317)	(0.0032)	(0.0033)	(0.0354)	(0.0040)	(0.0043)
$\left(\frac{Income}{10000}\right)^3$	-1.115	-0.292	-0.146	-1.288	-0.364	-0.178
	(0.1110)	(0.0083)	(0.0084)	(0.1240)	(0.0096)	(0.0101)
$\left(\frac{Income}{10000}\right)^4$	69.5	17.5	8.75	79.9	21.8	10.6
	(10.0000)	(0.5690)	(0.5720)	11.3000	(0.6390)	(0.6570)
$\frac{\sigma_{Income}}{10000}$	-0.145	-0.239	---	-0.149	-0.23	---
	(0.0069)	(0.0074)		(0.0072)	(0.0068)	
Head's characteristics						
$\frac{Age}{100}$	-0.1185	-0.0436	-0.0035	-0.1533	-0.0519	-0.0021
	(0.0175)	(0.0081)	(0.0094)	(0.0178)	(0.0081)	(0.0094)
0-8 yrs education	0.1048	0.0773	0.0069	0.1041	0.0823	0.0066
	(0.0052)	(0.0026)	(0.0037)	(0.0053)	(0.0025)	(0.0037)
9-11 yrs education	0.087	0.0877	0.0097	0.0895	0.0921	0.0102
	(0.0035)	(0.0021)	(0.0034)	(0.0035)	(0.0020)	(0.0034)
13-15 yrs education	-0.0175	-0.0199	0.0023	-0.0194	-0.0212	0.002
	(0.0017)	(0.0016)	(0.0025)	(0.0017)	(0.0015)	(0.0025)
16 or more yrs education	-0.015	-0.0298	-0.0006	-0.0173	-0.0307	-0.0007
	(0.0015)	(0.0020)	(0.0034)	(0.0015)	(0.0019)	(0.0034)
Black	0.103	0.1136	-0.0263	0.1039	0.1133	-0.0274
	(0.0053)	(0.0029)	(0.0099)	(0.0054)	(0.0028)	(0.0100)
Other race	0.0217	0.0309	-0.0057	0.0226	0.0314	-0.005
	(0.0060)	(0.0047)	(0.0113)	(0.0061)	(0.0045)	(0.0113)
Hispanic	0.0471	0.0495	-0.0037	0.0492	0.0501	-0.0035
	(0.0047)	(0.0030)	(0.0077)	(0.0022)	(0.0029)	(0.0077)
Male	-0.0435	-0.0704	-0.0262	-0.0467	-0.071	-0.027
	(0.0022)	(0.0019)	(0.0030)	(0.0123)	(0.0019)	(0.0030)
Widow	-0.037	-0.028	-0.0114	0.0256	-0.0323	-0.0131
	(0.0121)	(0.0052)	(0.0063)	(0.0106)	(0.0051)	(0.0063)
Divorced or separated	0.0339	0.0326	0.0126	0.1468	0.0321	0.0112
	(0.0104)	(0.0038)	(0.0042)	(0.0117)	(0.0038)	(0.0043)
Never married	0.1395	0.145	0.0118	0.0136	0.1529	0.012
	(0.0115)	(0.0044)	(0.0059)	(0.0015)	(0.0044)	(0.0059)
Veteran	0.0096	0.0133	0.0284	0.1448	0.0146	0.0311
	(0.0014)	(0.0018)	(0.0031)	(0.0172)	(0.0017)	(0.0031)
Spouse's characteristics						
$\frac{Age}{100}$	0.099	0.0194	0.0303	0.0098	0.0275	0.0324
	(0.0169)	(0.0092)	(0.0105)	(0.0059)	(0.0092)	(0.0105)
0-8 yrs education	0.0087	0.0233	0.0009	0.0118	0.0244	0.0009
	(0.0059)	(0.0030)	(0.0039)	(0.0035)	(0.0030)	(0.0039)
9-11 yrs education	0.0114	0.0248	-0.0049	0.0078	0.0257	-0.0051
	(0.0035)	(0.0024)	(0.0035)	(0.0014)	(0.0023)	(0.0035)

13-15 yrs education	0.0087	0.0018	0.0084	0.0225	0.0018	0.0086
	(0.0013)	(0.0017)	(0.0025)	(0.0014)	(0.0017)	(0.0025)
16 or more yrs education	0.0233	0.0092	0.0113	-0.0875	0.0101	0.0118
	(0.0014)	(0.0022)	(0.0033)	(0.0060)	(0.0021)	(0.0033)
Black	-0.0848	-0.0594	-0.0056	0.0037	-0.0642	-0.0068
	(0.0059)	(0.0035)	(0.0051)	(0.0057)	(0.0034)	(0.0051)
Other race	0.0047	0.0088	-0.0094	-0.0673	0.0083	-0.0096
	(0.0056)	(0.0049)	(0.0087)	(0.0047)	(0.0047)	(0.0087)
Hispanic	-0.067	-0.0366	-0.011	-0.0183	-0.0402	-0.0113
	(0.0046)	(0.0032)	(0.0052)	(0.0031)	(0.0031)	(0.0052)
Veteran	-0.016	-0.0147	0.0011	-0.1185	-0.0157	0.0021
	(0.0030)	(0.0034)	(0.0046)	(0.0121)	(0.0033)	(0.0046)
Spouse present	-0.0897	-0.0514	-0.0499	0.0545	-0.0589	-0.0538
	(0.0117)	(0.0050)	(0.0058)	(0.0030)	(0.0051)	(0.0059)
Household characteristics						
Woman delivered child this month	-0.0538	-0.0288	-0.0213	0.038	-0.02	-0.0136
	(0.0067)	(0.0040)	(0.0040)	(0.0035)	(0.0042)	(0.0042)
Woman pregnant this month	0.0189	0.016	0.0038	0.2185	0.0229	0.0077
	(0.0032)	(0.0019)	(0.0020)	(0.0142)	(0.0020)	(0.0021)
R^2	.3370	.3054	.0221	.3255	.3008	.0434

Notes: 497,786 observations on 95,833 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1005.

TABLE 10
Medicaid Participation, 1983-2000

	(1) MC, Std. Errors corrected for clustering	(2) MC, Random effects	(3) MC, Fixed effects	(4) MC, IV, Std. Errors corrected for clustering	(5) MC, IV, Random effects	(6) MC, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.5075	0.2044	0.113	0.2793	0.2353	0.1771
	(0.0087)	(0.0032)	(0.0034)	(0.0194)	(0.0120)	(0.0156)
$\frac{Income}{10000}$	-0.4973	-0.1248	-0.0294	-0.588	-0.1308	-0.0078
	(0.0187)	(0.0041)	(0.0044)	(0.0214)	(0.0058)	(0.0067)
$\left(\frac{Income}{10000}\right)^2$	0.4066	0.0935	0.0215	0.4686	0.099	0.799
	(0.0253)	(0.0037)	(0.0038)	(0.0284)	(0.0045)	(0.4970)
$\left(\frac{Income}{10000}\right)^3$	-0.919	-0.199	-0.0463	-1.054	-0.211	-0.019
	(0.0878)	(0.0096)	(0.0097)	(0.0985)	(0.0110)	(0.0117)
$\left(\frac{Income}{10000}\right)^4$	56.6	11.8	2.75	64.7	12.5	1.18
	(7.9200)	(0.6580)	(0.6650)	(8.9100)	(0.7340)	(0.7630)
$\frac{\sigma_{Income}}{10000}$	-0.169	-0.277	---	-0.172	-0.266	---
	(0.0077)	(0.0080)		(0.0078)	(0.0075)	
Head's characteristics						
$\frac{Age}{100}$	-0.125	-0.0642	-0.0258	-0.1522	-0.066	-0.027
	(0.0202)	(0.0093)	(0.0109)	(0.0204)	(0.0093)	(0.0109)
0-8 yrs education	0.1051	0.089	0.0146	0.1046	0.0927	0.0149
	(0.0056)	(0.0029)	(0.0043)	(0.0056)	(0.0028)	(0.0043)
9-11 yrs education	0.0931	0.0935	0.0081	0.0951	0.0956	0.0077
	(0.0037)	(0.0023)	(0.0039)	(0.0038)	(0.0023)	(0.0039)
13-15 yrs education	-0.0165	-0.0227	-0.0028	-0.018	-0.0227	-0.0026
	(0.0020)	(0.0018)	(0.0029)	(0.0020)	(0.0017)	(0.0029)
16 or more yrs education	-0.0236	-0.0421	-0.0069	-0.0254	-0.0419	-0.0068
	(0.0018)	(0.0022)	(0.0039)	(0.0019)	(0.0022)	(0.0039)
Black	0.0852	0.108	-0.0223	0.086	0.1064	-0.0214
	(0.0055)	(0.0032)	(0.0116)	(0.0055)	(0.0031)	(0.0116)
Other race	0.0317	0.0448	0.0483	0.0324	0.0443	0.0477
	(0.0069)	(0.0052)	(0.0131)	(0.0069)	(0.0050)	(0.0131)
Hispanic	0.0467	0.0534	0.0132	0.0483	0.0525	0.0131
	(0.0050)	(0.0033)	(0.0089)	(0.0027)	(0.0032)	(0.0089)
Male	-0.0519	-0.0827	-0.0353	-0.0128	-0.082	-0.0347
	(0.0027)	(0.0022)	(0.0035)	(0.0131)	(0.0021)	(0.0035)
Widow	-0.0053	-0.0021	-0.0012	0.0386	-0.0015	0.0002
	(0.0130)	(0.0059)	(0.0073)	(0.0109)	(0.0058)	(0.0073)
Divorced or separated	0.0451	0.0342	0.0069	0.1819	0.0366	0.0081
	(0.0108)	(0.0043)	(0.0049)	(0.0119)	(0.0043)	(0.0049)
Never married	0.1762	0.172	0.0102	0.0117	0.1761	0.01
	(0.0118)	(0.0050)	(0.0068)	(0.0018)	(0.0050)	(0.0068)
Veteran	0.0086	0.0112	0.0169	-0.0316	0.0107	0.0147
	(0.0018)	(0.0020)	(0.0036)	(0.0206)	(0.0019)	(0.0036)
Spouse's characteristics						
$\frac{Age}{100}$	-0.0674	-0.0648	-0.029	0.0119	-0.0673	-0.0307
	(0.0203)	(0.0105)	(0.0122)	(0.0064)	(0.0105)	(0.0122)
0-8 yrs education	0.0111	0.0204	-0.005	0.0221	0.0212	-0.005
	(0.0064)	(0.0034)	(0.0046)	(0.0041)	(0.0033)	(0.0046)
9-11 yrs education	0.0217	0.0331	-0.0014	0.0034	0.0338	-0.0013

	(0.0040)	(0.0027)	(0.0040)	(0.0018)	(0.0026)	(0.0040)
13-15 yrs education	0.0041	-0.0038	0.0035	0.0101	-0.0035	0.0033
	(0.0018)	(0.0019)	(0.0029)	(0.0019)	(0.0019)	(0.0029)
16 or more yrs education	0.0107	-0.0032	0.0074	-0.0511	-0.0027	0.007
	(0.0018)	(0.0024)	(0.0039)	(0.0064)	(0.0023)	(0.0039)
Black	-0.049	-0.0437	-0.0091	0.0072	-0.0446	-0.008
	(0.0064)	(0.0039)	(0.0060)	(0.0067)	(0.0038)	(0.0060)
Other race	0.008	0.0152	0.0273	-0.0529	0.0147	0.0274
	(0.0067)	(0.0055)	(0.0101)	(0.0052)	(0.0052)	(0.0101)
Hispanic	-0.0527	-0.0268	-0.0048	-0.0078	-0.0291	-0.0046
	(0.0051)	(0.0036)	(0.0060)	(0.0044)	(0.0035)	(0.0060)
Veteran	-0.006	-0.0103	0.0046	-0.0511	-0.0107	0.0038
	(0.0044)	(0.0038)	(0.0054)	(0.0129)	(0.0037)	(0.0054)
Spouse present	-0.0286	-0.0148	-0.0247	0.0612	-0.014	-0.0214
	(0.0127)	(0.0058)	(0.0068)	(0.0032)	(0.0058)	(0.0068)
Household characteristics						
Woman delivered child this month	-0.0496	-0.0089	0.0017	0.0419	-0.0121	-0.0048
	(0.0076)	(0.0046)	(0.0046)	(0.0038)	(0.0048)	(0.0049)
Woman pregnant this month	0.027	0.0336	0.0242	0.1074	0.0329	0.021
	(0.0035)	(0.0022)	(0.0023)	(0.0147)	(0.0023)	(0.0024)
R^2	.3288	.2967	.0458	.3232	.3010	.0007

Notes: 497,786 observations on 95,833 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1290.

TABLE 11
Food Stamp Participation, 1990-2000

	(1) FSP, Std. Errors corrected for clustering	(2) FSP, Random effects	(3) FSP, Fixed effects	(4) FSP, IV, Std. Errors corrected for clustering	(5) FSP, IV, Random effects	(6) FSP, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.4254	0.1549	0.0886	0.0786	0.0844	0.0374
	(0.0095)	(0.0030)	(0.0032)	(0.0332)	(0.0163)	(0.0189)
$\frac{Income}{10000}$	-0.5074	-0.1704	-0.0928	-0.6995	-0.2253	-0.1169
	(0.0241)	(0.0045)	(0.0046)	(0.0333)	(0.0091)	(0.0099)
$\left(\frac{Income}{10000}\right)^2$	0.4168	0.127	0.0685	0.5501	0.1634	0.0833
	(0.0301)	(0.0037)	(0.0037)	(0.0388)	(0.0062)	(0.0066)
$\left(\frac{Income}{10000}\right)^3$	-0.946	-0.271	-0.147	-1.236	-0.346	-0.177
	(0.0996)	(0.0092)	(0.0093)	(0.1270)	(0.0137)	(0.0142)
$\left(\frac{Income}{10000}\right)^4$	58.2	16.1	8.77	75.8	20.5	10.5
	(8.6800)	(0.6220)	(0.6230)	(11.0000)	(0.8560)	(0.8740)
$\frac{\sigma_{Income}}{10000}$	-0.116	-0.203	---	-0.12	-0.192	---
	(0.0070)	(0.0851)		(0.0075)	(0.0079)	
Head's characteristics						
$\frac{Age}{100}$	-0.1928	-0.2035	0.0382	-0.2758	-0.2267	0.0336
	(0.0291)	(0.0161)	(0.0291)	(0.0305)	(0.0161)	(0.0292)
0-8 yrs education	0.1087	0.0793	0.0099	0.1098	0.0854	0.0097
	(0.0073)	(0.0035)	(0.0048)	(0.0074)	(0.0034)	(0.0048)
9-11 yrs education	0.0845	0.0849	0.0064	0.09	0.0903	0.0068
	(0.0047)	(0.0027)	(0.0042)	(0.0048)	(0.0026)	(0.0042)
13-15 yrs education	-0.0176	-0.0207	0.0047	-0.0197	-0.0221	0.0046
	(0.0022)	(0.0020)	(0.0030)	(0.0023)	(0.0019)	(0.0030)
16 or more yrs education	-0.0143	-0.0324	0.0004	-0.0165	-0.0331	0.0004
	(0.0019)	(0.0025)	(0.0041)	(0.0020)	(0.0024)	(0.0041)
Black	0.0978	0.118	-0.0115	0.1	0.1172	-0.0123
	(0.0065)	(0.0037)	(0.0119)	(0.0067)	(0.0035)	(0.0119)
Other race	0.0222	0.0373	0.0116	0.0229	0.0373	0.0123
	(0.0071)	(0.0057)	(0.0131)	(0.0073)	(0.0054)	(0.0131)
Hispanic	0.0431	0.0452	0.0013	0.0451	0.0455	0.0016
	(0.0057)	(0.0037)	(0.0095)	(0.0026)	(0.0035)	(0.0096)
Male	-0.0311	-0.0546	-0.0175	-0.0275	-0.0546	-0.0176
	(0.0025)	(0.0024)	(0.0037)	(0.0157)	(0.0023)	(0.0037)
Widow	-0.017	-0.0071	-0.0088	0.0181	-0.0083	-0.0097
	(0.0154)	(0.0066)	(0.0078)	(0.0128)	(0.0065)	(0.0078)
Divorced or separated	0.0279	0.0296	0.0096	0.1399	0.0296	0.0088
	(0.0124)	(0.0045)	(0.0050)	(0.0142)	(0.0046)	(0.0050)
Never married	0.1313	0.1351	0.0082	0.0099	0.143	0.0083
	(0.0138)	(0.0053)	(0.0070)	(0.0020)	(0.0053)	(0.0070)
Veteran	0.0071	0.0046	0.0112	0.2093	0.0052	0.0111
	(0.0020)	(0.0027)	(0.0055)	(0.0289)	(0.0025)	(0.0055)
Spouse's characteristics						
$\frac{Age}{100}$	0.1093	0.083	0.1638	0.005	0.1026	0.1696
	(0.0272)	(0.0178)	(0.0243)	(0.0081)	(0.0177)	(0.0244)
0-8 yrs education	0.0037	0.0231	0.0052	0.0128	0.0239	0.0052
	(0.0080)	(0.0040)	(0.0050)	(0.0050)	(0.0039)	(0.0050)
9-11 yrs education	0.011	0.0216	-0.0128	0.0065	0.0237	-0.0131

	(0.0049)	(0.0032)	(0.0043)	(0.0018)	(0.0031)	(0.0043)
13-15 yrs education	0.0079	0.0002	0.008	0.0229	0.0002	0.0083
	(0.0017)	(0.0022)	(0.0030)	(0.0019)	(0.0021)	(0.0030)
16 or more yrs education	0.0236	0.0069	0.0106	-0.0804	0.008	0.0112
	(0.0018)	(0.0027)	(0.0040)	(0.0073)	(0.0026)	(0.0040)
Black	-0.0775	-0.0596	-0.0168	-0.0017	-0.0635	-0.0178
	(0.0072)	(0.0044)	(0.0061)	(0.0068)	(0.0042)	(0.0061)
Other race	-0.0022	-0.0022	-0.0169	-0.0677	-0.0017	-0.017
	(0.0067)	(0.0060)	(0.0102)	(0.0057)	(0.0057)	(0.0102)
Hispanic	-0.0678	-0.033	0.0013	-0.0173	-0.0372	0.0011
	(0.0055)	(0.0039)	(0.0061)	(0.0038)	(0.0038)	(0.0061)
Veteran	-0.0143	-0.0149	0	-0.151	-0.0163	-0.0003
	(0.0036)	(0.0043)	(0.0062)	(0.0164)	(0.0041)	(0.0062)
Spouse present	-0.0982	-0.078	-0.1013	0.0509	-0.0895	-0.1054
	(0.0153)	(0.0077)	(0.0099)	(0.0062)	(0.0078)	(0.0100)
Household characteristics						
Woman delivered child this month	-0.0826	-0.0373	-0.026	0.0366	-0.0268	-0.0183
	(0.0089)	(0.0050)	(0.0051)	(0.0052)	(0.0057)	(0.0058)
Woman pregnant this month	0.0056	0.0094	0.0005	0.2774	0.0167	0.004
	(0.0039)	(0.0023)	(0.0024)	(0.0197)	(0.0027)	(0.0027)
R^2	.3589	.3228	.1693	.3411	.3184	.1561

Notes: 333,302 observations on 58,493 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1076.

TABLE 12
Medicaid Participation, 1990-2000

	(1) MC, Std. Errors corrected for clustering	(2) MC, Random effects	(3) MC, Fixed effects	(4) MC, IV, Std. Errors corrected for clustering	(5) MC, IV, Random effects	(6) MC, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.5166	0.1989	0.1086	0.2216	0.2211	0.1778
	(0.0098)	(0.0037)	(0.0039)	(0.0372)	(0.0194)	(0.0232)
$\frac{Income}{10000}$	-0.5156	-0.1511	-0.0505	-0.6789	-0.1602	-0.0179
	(0.0223)	(0.0054)	(0.0056)	(0.0326)	(0.0109)	(0.0122)
$\left(\frac{Income}{10000}\right)^2$	0.4015	0.1088	0.036	0.5148	0.116	0.016
	(0.0272)	(0.0045)	(0.0046)	(0.0356)	(0.0075)	(0.0080)
$\left(\frac{Income}{10000}\right)^3$	-0.888	-0.228	-0.0766	-1.134	-0.243	-0.0369
	(0.0894)	(0.0112)	(0.0114)	(0.1140)	(0.0165)	(0.0174)
$\left(\frac{Income}{10000}\right)^4$	54	13.4	4.54	68.9	14.3	2.26
	(7.7600)	(0.7590)	(0.7630)	(9.8100)	(1.0400)	(1.0700)
$\frac{\sigma_{Income}}{10000}$	-0.147	-0.248	---	-0.15	-0.238	---
	(0.0084)	(0.0095)		(0.0087)	(0.0089)	
Head's characteristics						
$\frac{Age}{100}$	-0.2085	-0.1896	-0.0336	-0.2792	-0.189	-0.0274
	(0.0340)	(0.0188)	(0.0356)	(0.0352)	(0.0189)	(0.0357)
0-8 yrs education	0.1117	0.0942	0.0142	0.1127	0.0984	0.0144
	(0.0079)	(0.0041)	(0.0059)	(0.0080)	(0.0040)	(0.0059)
9-11 yrs education	0.0974	0.0971	0.0013	0.1021	0.1	0.0007
	(0.0052)	(0.0032)	(0.0051)	(0.0053)	(0.0031)	(0.0051)
13-15 yrs education	-0.0158	-0.0254	-0.0035	-0.0177	-0.0254	-0.0033
	(0.0026)	(0.0023)	(0.0037)	(0.0027)	(0.0022)	(0.0037)
16 or more yrs education	-0.0247	-0.0495	-0.0075	-0.0266	-0.0492	-0.0075
	(0.0025)	(0.0029)	(0.0050)	(0.0025)	(0.0028)	(0.0050)
Black	0.0803	0.1087	-0.039	0.0822	0.1066	-0.0379
	(0.0066)	(0.0042)	(0.0145)	(0.0067)	(0.0040)	(0.0145)
Other race	0.0346	0.0529	0.0704	0.0352	0.052	0.0694
	(0.0084)	(0.0065)	(0.0160)	(0.0085)	(0.0062)	(0.0160)
Hispanic	0.0376	0.0451	0.0067	0.0393	0.044	0.0063
	(0.0060)	(0.0042)	(0.0117)	(0.0033)	(0.0040)	(0.0117)
Male	-0.042	-0.0706	-0.0288	0.0156	-0.0698	-0.0285
	(0.0032)	(0.0028)	(0.0046)	(0.0170)	(0.0027)	(0.0046)
Widow	0.0245	0.0186	-0.0015	0.0347	0.0206	-0.0004
	(0.0168)	(0.0078)	(0.0096)	(0.0133)	(0.0078)	(0.0096)
Divorced or separated	0.043	0.0347	0.0093	0.179	0.0368	0.0104
	(0.0131)	(0.0054)	(0.0062)	(0.0145)	(0.0054)	(0.0062)
Never married	0.1717	0.1704	0.0114	0.0061	0.1751	0.0113
	(0.0143)	(0.0063)	(0.0086)	(0.0027)	(0.0063)	(0.0086)
Veteran	0.0037	0.0008	-0.0008	-0.0491	0.0009	-0.0007
	(0.0026)	(0.0030)	(0.0067)	(0.0355)	(0.0029)	(0.0067)
Spouse's characteristics						
$\frac{Age}{100}$	-0.1341	-0.1346	-0.0006	0.0217	-0.1358	-0.0679
	(0.0339)	(0.0209)	(0.0003)	(0.0090)	(0.0208)	(0.0299)
0-8 yrs education	0.0206	0.0309	-0.0008	0.0361	0.0321	-0.0007
	(0.0089)	(0.0047)	(0.0062)	(0.0060)	(0.0046)	(0.0062)
9-11 yrs education	0.0345	0.0438	-0.0055	0.0009	0.0457	-0.0052

	(0.0059)	(0.0037)	(0.0053)	(0.0025)	(0.0036)	(0.0053)
13-15 yrs education	0.0021	-0.0088	-0.0013	0.0086	-0.0084	-0.0016
	(0.0024)	(0.0025)	(0.0037)	(0.0025)	(0.0025)	(0.0037)
16 or more yrs education	0.0092	-0.0084	0.0049	-0.0397	-0.0079	0.0042
	(0.0025)	(0.0031)	(0.0048)	(0.0080)	(0.0030)	(0.0049)
Black	-0.0373	-0.0345	-0.0064	0.0041	-0.0353	-0.0052
	(0.0078)	(0.0051)	(0.0075)	(0.0083)	(0.0049)	(0.0075)
Other race	0.0036	0.0106	0.0309	-0.0485	0.0099	0.031
	(0.0082)	(0.0069)	(0.0125)	(0.0064)	(0.0066)	(0.0125)
Hispanic	-0.0486	-0.0183	0.0074	-0.0046	-0.021	0.0078
	(0.0062)	(0.0046)	(0.0075)	(0.0056)	(0.0044)	(0.0075)
Veteran	-0.0019	-0.0116	-0.0025	-0.0471	-0.0115	-0.0022
	(0.0055)	(0.0050)	(0.0076)	(0.0182)	(0.0048)	(0.0076)
Spouse present	-0.0022	0.0088	-0.0127	0.0705	0.0088	-0.0072
	(0.0172)	(0.0091)	(0.0122)	(0.0069)	(0.0092)	(0.0123)
Household characteristics						
Woman delivered child this month	-0.0713	-0.014	0.0009	0.0468	-0.0175	-0.0095
	(0.0102)	(0.0062)	(0.0062)	(0.0059)	(0.0069)	(0.0071)
Woman pregnant this month	0.0205	0.0363	0.029	0.188	0.0357	0.0243
	(0.0045)	(0.0029)	(0.0029)	(0.0210)	(0.0033)	(0.0033)
R^2	.3475	.3123	.1659	.3378	.3165	.1754

Notes: 333,302 observations on 58,493 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1507.

TABLE 13
Food Stamp Participation, 1990-2000

	(1) FSP, Std. Errors corrected for clustering	(2) FSP, Random effects	(3) FSP, Fixed effects	(4) FSP, IV, Std. Errors corrected for clustering	(5) FSP, IV, Random effects	(6) FSP, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.467	0.1769	0.1047	0.0834	0.0932	0.0435
	(0.0110)	(0.0035)	(0.0037)	(0.0349)	(0.0173)	(0.0201)
HH replacement rate*aggressive outreach state	-0.1018	-0.052	-0.0376	-0.0109	-0.0209	-0.0144
	(0.0137)	(0.0043)	(0.0045)	(0.0193)	(0.0100)	(0.0108)
Aggressive outreach state	0.0044	0.0023	0.0018	-0.0004	0.0008	0.0008
	(0.0016)	(0.0009)	(0.0009)	(0.0020)	(0.0011)	(0.0011)
$\frac{Income}{10000}$	-0.5054	-0.1697	-0.0923	-0.6989	-0.2249	-0.1167
	(0.0240)	(0.0045)	(0.0046)	(0.0333)	(0.0091)	(0.0099)
$\left(\frac{Income}{10000}\right)^2$	0.4146	0.1263	0.068	0.5497	0.163	0.0831
	(0.0300)	(0.0037)	(0.0037)	(0.0388)	(0.0062)	(0.0066)
$\left(\frac{Income}{10000}\right)^3$	-0.941	-0.27	-0.146	-1.235	-0.346	-0.176
	(0.0991)	(0.0092)	(0.0093)	(0.1270)	(0.0137)	(0.0142)
$\left(\frac{Income}{10000}\right)^4$	57.9	16	8.71	75.7	20.4	10.4
	(8.6300)	(0.6220)	(0.6230)	(11.0000)	(0.8580)	0.0000
$\frac{\sigma}{10000}$	-0.116	-0.203	---	-0.119	-0.192	---
	(0.0070)	(0.0085)		(0.0075)	(0.0079)	
Head's characteristics						
$\frac{Age}{100}$	-0.1917	-0.2024	0.0378	-0.275	-0.2261	0.0334
	(0.0291)	(0.0161)	(0.0292)	(0.0305)	(0.0161)	(0.0292)
0-8 yrs education	0.1083	0.0791	0.0098	0.1098	0.0853	0.0096
	(0.0073)	(0.0035)	(0.0048)	(0.0074)	(0.0034)	(0.0048)
9-11 yrs education	0.0842	0.0847	0.0061	0.0899	0.0902	0.0066
	(0.0047)	(0.0027)	(0.0042)	(0.0048)	(0.0027)	(0.0042)
13-15 yrs education	-0.0177	-0.0209	0.0043	-0.0198	-0.0223	0.0041
	(0.0022)	(0.0020)	(0.0030)	(0.0023)	(0.0019)	(0.0030)
16 or more yrs education	-0.0145	-0.0325	0.0001	-0.0166	-0.0332	0.0002
	(0.0019)	(0.0025)	(0.0041)	(0.0020)	(0.0024)	(0.0041)
Black	0.0986	0.1179	-0.0123	0.1001	0.1171	-0.013
	(0.0065)	(0.0037)	(0.0119)	(0.0067)	(0.0035)	(0.0119)
Other race	0.0221	0.0373	0.0119	0.0229	0.0373	0.0124
	(0.0071)	(0.0057)	(0.0131)	(0.0073)	(0.0054)	(0.0131)
Hispanic	0.0423	0.0447	0.0012	0.045	0.0454	0.0015
	(0.0056)	(0.0037)	(0.0095)	(0.0026)	(0.0035)	(0.0095)
Male	-0.031	-0.0543	-0.0169	-0.0277	-0.0544	-0.0171
	(0.0025)	(0.0024)	(0.0037)	(0.0157)	(0.0023)	(0.0037)
Widow	-0.0167	-0.0069	-0.0087	0.0182	-0.0082	-0.0096
	(0.0153)	(0.0066)	(0.0078)	(0.0128)	(0.0065)	(0.0078)
Divorced or separated	0.0284	0.03	0.0099	0.14	0.0297	0.0088
	(0.0124)	(0.0045)	(0.0050)	(0.0142)	(0.0046)	(0.0050)
Never married	0.1325	0.1354	0.0084	0.0099	0.1431	0.0084
	(0.0137)	(0.0053)	(0.0070)	(0.0020)	(0.0053)	(0.0070)
Veteran	0.0072	0.0046	0.0109	0.2101	0.0052	0.0108
	(0.0019)	(0.0026)	(0.0055)	(0.0289)	(0.0025)	(0.0055)
Spouse's characteristics						

$\frac{Age}{100}$	0.1082 (0.0272)	0.0823 (0.0178)	0.1629 (0.0243)	0.005 (0.0081)	0.1032 (0.0177)	0.1703 (0.0244)
0-8 yrs education	0.0038 (0.0080)	0.0232 (0.0040)	0.0054 (0.0050)	0.013 (0.0050)	0.0239 (0.0039)	0.0053 (0.0050)
9-11 yrs education	0.011 (0.0049)	0.0216 (0.0032)	-0.0129 (0.0043)	0.0066 (0.0018)	0.0237 (0.0031)	-0.0131 (0.0043)
13-15 yrs education	0.0079 (0.0017)	0.0003 (0.0022)	0.0083 (0.0030)	0.0229 (0.0019)	0.0003 (0.0021)	0.0085 (0.0030)
16 or more yrs education	0.0236 (0.0018)	0.007 (0.0027)	0.0107 (0.0040)	-0.0807 (0.0074)	0.0081 (0.0026)	0.0112 (0.0040)
Black	-0.0785 (0.0072)	-0.0592 (0.0044)	-0.0157 (0.0061)	-0.0018 (0.0068)	-0.063 (0.0042)	-0.0165 (0.0061)
Other race	-0.0023 (0.0067)	-0.002 (0.0060)	-0.0166 (0.0102)	-0.0677 (0.0056)	-0.0017 (0.0057)	-0.0169 (0.0102)
Hispanic	-0.0676 (0.0055)	-0.0329 (0.0039)	0.0013 (0.0061)	-0.0174 (0.0038)	-0.0371 (0.0038)	0.001 (0.0061)
Veteran	-0.0144 (0.0036)	-0.0147 (0.0043)	0.0001 (0.0062)	-0.1512 (0.0164)	-0.0162 (0.0041)	-0.0003 (0.0062)
Spouse present	-0.097 (0.0152)	-0.0774 (0.0077)	-0.1008 (0.0099)	0.0508 (0.0062)	-0.0895 (0.0078)	-0.1056 (0.0100)
Household characteristics						
Woman delivered child this month	-0.0843 (0.0090)	-0.0381 (0.0050)	-0.0265 (0.0051)	0.0365 (0.0052)	-0.0271 (0.0057)	-0.0185 (0.0058)
Woman pregnant this month	0.0053 (0.0039)	0.0091 (0.0023)	0.0003 (0.0024)	0.2779 (0.0197)	0.0166 (0.0027)	0.0039 (0.0027)
R^2	.3597	.3236	.1734	.3413	.3188	.1242

Notes: 333,302 observations on 58,493 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1076.

TABLE 14
Medicaid Participation, 1990-2000

	(1) MC, Std. Errors corrected for clustering	(2) MC, Random effects	(3) MC, Fixed effects	(4) MC, IV, Std. Errors corrected for clustering	(5) MC, IV, Random effects	(6) MC, IV, Fixed effects
HH replacement rate, based on actual eligibility	0.5452	0.2181	0.122	0.2125	0.2258	0.1833
	(0.0111)	(0.0043)	(0.0045)	(0.0391)	(0.0206)	(0.0246)
HH replacement rate*aggressive outreach state	-0.0695	-0.0455	-0.0315	0.0213	-0.0107	-0.0126
	(0.0135)	(0.0053)	(0.0055)	(0.0214)	(0.0120)	(0.0132)
Aggressive outreach state	-0.0033	0	0	-0.0083	-0.0024	-0.0016
	(0.0019)	(0.0011)	(0.0011)	(0.0024)	(0.0013)	(0.0013)
$\frac{Income}{10000}$	-0.514	-0.1504	-0.0501	-0.6795	-0.1597	-0.0176
	(0.0222)	(0.0054)	(0.0056)	(0.0327)	(0.0110)	(0.0122)
$\left(\frac{Income}{10000}\right)^2$	0.3999	0.108	0.0355	0.5155	0.1156	0.0157
	(0.0271)	(0.0045)	(0.0046)	(0.0357)	(0.0075)	(0.0081)
$\left(\frac{Income}{10000}\right)^3$	-0.884	-0.226	-0.0755	-1.136	-0.242	-0.0361
	(0.0891)	(0.0112)	(0.0114)	(0.1140)	(0.0166)	(0.0174)
$\left(\frac{Income}{10000}\right)^4$	53.8	13.3	4.46	69	14.2	2.21
	(7.7300)	(0.7590)	(0.7630)	(9.8200)	(1.0400)	(1.0700)
$\frac{\sigma}{10000}$	-0.147	-0.248	---	-0.15	-0.238	---
	(0.0084)	(0.0095)		(0.0087)	(0.0089)	
Head's characteristics						
$\frac{Age}{100}$	-0.2089	-0.1889	-0.0332	-0.2801	-0.1889	-0.0267
	(0.0340)	(0.0188)	(0.0357)	(0.0352)	(0.0189)	(0.0358)
0-8 yrs education	0.1116	0.0941	0.0142	0.1129	0.0983	0.0145
	(0.0079)	(0.0041)	(0.0059)	(0.0080)	(0.0040)	(0.0059)
9-11 yrs education	0.0971	0.0969	0.0012	0.102	0.0999	0.0007
	(0.0052)	(0.0032)	(0.0051)	(0.0053)	(0.0031)	(0.0051)
13-15 yrs education	-0.0158	-0.0254	-0.0033	-0.0176	-0.0254	-0.0031
	(0.0026)	(0.0023)	(0.0037)	(0.0027)	(0.0022)	(0.0037)
16 or more yrs education	-0.0248	-0.0495	-0.0074	-0.0265	-0.0492	-0.0075
	(0.0025)	(0.0029)	(0.0050)	(0.0025)	(0.0028)	(0.0050)
Black	0.0812	0.1091	-0.0391	0.0824	0.1068	-0.038
	(0.0066)	(0.0042)	(0.0145)	(0.0067)	(0.0040)	(0.0145)
Other race	0.0345	0.0529	0.0706	0.0352	0.0521	0.0694
	(0.0084)	(0.0065)	(0.0160)	(0.0085)	(0.0062)	(0.0160)
Hispanic	0.0371	0.0447	0.0067	0.0395	0.0439	0.0063
	(0.0060)	(0.0042)	(0.0117)	(0.0033)	(0.0040)	(0.0117)
Male	-0.0417	-0.0706	-0.029	0.0154	-0.0698	-0.0287
	(0.0032)	(0.0028)	(0.0046)	(0.0170)	(0.0027)	(0.0046)
Widow	0.0249	0.0187	-0.0015	0.0344	0.0206	-0.0003
	(0.0168)	(0.0078)	(0.0096)	(0.0133)	(0.0078)	(0.0096)
Divorced or separated	0.0432	0.0351	0.0098	0.1787	0.037	0.0107
	(0.0131)	(0.0054)	(0.0061)	(0.0145)	(0.0054)	(0.0062)
Never married	0.1724	0.1709	0.0116	0.0061	0.1752	0.0113
	(0.0142)	(0.0063)	(0.0086)	(0.0027)	(0.0063)	(0.0086)
Veteran	0.0037	0.0008	-0.0008	-0.0486	0.0009	-0.0006
	(0.0026)	(0.0030)	(0.0067)	(0.0355)	(0.0029)	(0.0067)
Spouse's characteristics						

$\frac{Age}{100}$	-0.1358 (0.0339)	-0.136 (0.0209)	-0.0615 (0.0297)	0.0219 (0.0090)	-0.1358 (0.0209)	-0.0681 (0.0299)
0-8 yrs education	0.0208 (0.0089)	0.0309 (0.0047)	-0.0008 (0.0062)	0.0365 (0.0060)	0.0321 (0.0046)	-0.0007 (0.0062)
9-11 yrs education	0.0348 (0.0059)	0.0438 (0.0037)	-0.0056 (0.0053)	0.0008 (0.0025)	0.0457 (0.0036)	-0.0052 (0.0053)
13-15 yrs education	0.002 (0.0024)	-0.0088 (0.0025)	-0.0014 (0.0037)	0.0087 (0.0025)	-0.0085 (0.0025)	-0.0017 (0.0037)
16 or more yrs education	0.0092 (0.0025)	-0.0084 (0.0031)	0.0049 (0.0048)	-0.0404 (0.0080)	-0.0079 (0.0030)	0.0042 (0.0049)
Black	-0.0386 (0.0078)	-0.0351 (0.0051)	-0.0073 (0.0075)	0.004 (0.0083)	-0.0356 (0.0049)	-0.0059 (0.0075)
Other race	0.0035 (0.0082)	0.0106 (0.0069)	0.0312 (0.0125)	-0.0486 (0.0064)	0.0099 (0.0066)	0.0311 (0.0125)
Hispanic	-0.0486 (0.0062)	-0.0181 (0.0046)	0.0076 (0.0075)	-0.0045 (0.0056)	-0.021 (0.0044)	0.0078 (0.0075)
Veteran	-0.0019 (0.0055)	-0.0113 (0.0050)	-0.0023 (0.0076)	-0.0477 (0.0182)	-0.0113 (0.0048)	-0.0021 (0.0076)
Spouse present	-0.0013 (0.0171)	0.0097 (0.0091)	-0.0118 (0.0122)	0.0709 (0.0070)	0.0088 (0.0092)	-0.0069 (0.0123)
Household characteristics						
Woman delivered child this month	-0.0726 (0.0103)	-0.0147 (0.0062)	0.0004 (0.0062)	0.0468 (0.0059)	-0.0178 (0.0069)	-0.0097 (0.0071)
Woman pregnant this month	0.0201 (0.0045)	0.0361 (0.0029)	0.029 (0.0029)	0.1949 (0.0211)	0.0357 (0.0033)	0.0243 (0.0033)
R^2	.3479	.3128	.1663	.3378	.3167	.0973

Notes: 333,302 observations on 58,493 households. In addition to the covariates shown and a constant term, all specifications include sixteen variables to control for the number of males and females in different age brackets (age 0, age 1, age 2-5, age 6-9, age 10-14, age 15-18, age 19-29, age 30-39, age 40-49, age 50-59, and age 60-64). Each specification also includes dummy variables for state of residence, year, and month. The mean of the dependent variable is .1507.

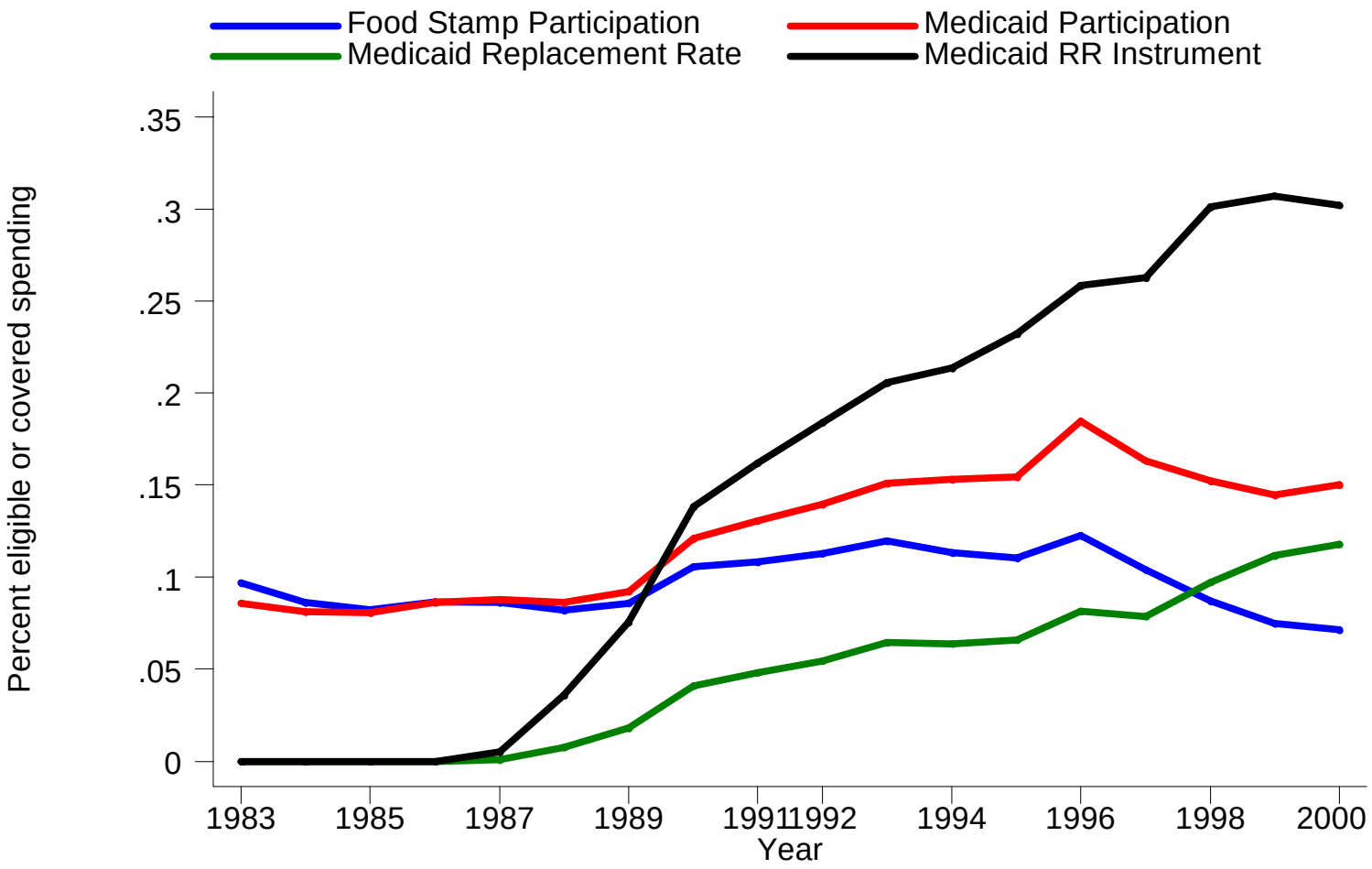

FIGURE 1: Trends in program participation and policy